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ORIGINAL ARTICLES.

THE DIGESTIVE FERMENTS.

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NO WHERE has the race greater reason to be proud of its achievements in the acquisition of scientific knowledge than in organic chemistry. It has given us new and beautiful dyes, sweet odors and useful remedial agents. It has carried its syntheses up from the simplest hydrocarbons to highly complex substances, before only produced by plant life, and attacking even the alkaloids has unraveled the tangled skein of their composition. When we stop to calculate the number of new substances and new reactions discovered within the present generation we reach figures that are quite appalling in their magnitude. They run away up among the tens of thousands, and into a region that baffles the powers of memory. No one mind could retain them all, and yet the popular superstitious notion still holds sway that disgraces an individual for failing to be posted in everything pertaining at least to the department of his special study. When will the world ever learn that, by the very nature of things, the deepest ocean must have its shallows and sand-bars? In spite of all our accumulated wealth of erudition, the student of physiological chemistry is painfully aware of the inadequacy of the data at hand to solve the problems that incessantly confront him. They certainly can appreciate the depth of meaning expressed by Newton when he declared that he felt like a child gathering pebbles by the sea-shore, here and there picking up one more beautiful than its fellows, but always conscious of the fact that the whole vast ocean whence they came lay all unexplored before him. But how sad it is to think that even the few scattering pearls that have been gathered by man, small as they are in comparison with the total, are already too numerous for the pigmy grasp of our best memorizers. More and more are we being forced to depend upon our libraries and text-books to supplement the contents of our minds. In this way we are enabled to gain, as needed, the labors of hundreds or thousands of men. But the total chemical knowledge of our race is insignificant when compared with the total skill (or shall we call it knowledge?) of the microscopic cells of plants and animals. These quiet little workers, free from ostentation and complaint, go on day by day producing results that we can neither approximate nor fully understand. They seem to have the power to build molecules as we build houses, and at their whims to decompose them again. On their labors hang the life and health, sickness and death of each one of us. We can enter no labyrinthine structure they have not before threaded. Along the synthetic upward route to protoplasm they guide the molecules. Every change is surrounded by pitfalls of affinities they must wade. Right and left, front and back, along the entire line, are numberless possibilities of deviation from the predestined path where health and life-giving substances could easily change into others death-dealing and dangerous. These skillful little chemists evade all such pitfalls, and direct every change ordained by the survived fitnesses of millions of generations. How they do it we can not tell, but we are using all diligence to try to wrest their secrets from them. Our best chemists, try as they will, can not follow the main path toward the structures of but few organic substances on the way to albumen and other proteids. There are too many side ways, bewildering with their complexity. Here and there along the line we have forced an entrance and gained an insight for a short distance, only to lose ourselves again in the maze. At the very door of the organic world the initiatory step can not be discovered. How the little workers seize upon the molecules of carbon dioxide, and by the sympathetic rhythm of a sunbeam, force its carbon into the nascent state we can partially surmise. But how six molecules of water time their unions with six nascent carbon atoms to give us sugar, still remains a profound mystery. Somehow or other they do it, and many ingenious guesses have been made as to the way, but none of them have advanced beyond the stage of being mere guesses. Certain it is that the first known physiological product of plant activity is a glucose, and, strange to say, the first known physiological product of the human organism, considered as a chemist's laboratory, is also a glucose. During the act of mastication our food is mixed with saliva. This contains a substance capable of converting insoluble and unassimilable starchy substances into soluble glucoses, fit for immediate assimilation. This is the first chemical change in human digestion, and the first of the alterations the food undergoes before it has become fit to enter the circula-

tion as nourishment for the system. The chemical difference between starch and glucose is H_2O, or one molecule of water. On forcing a molecule of water into the structure of a molecule of starch it is at once converted into a molecule of grape sugar. From being insoluble it becomes soluble in water by the change, and from being tasteless it acquires a sweet taste. But starch and water merely mixed can never produce such results. Something must enable the molecules to blend in a common structure.

That something is found in the saliva, and is known as ptyalin. The change it succeeds in producing does not appear to be due to any change in itself or to any loss in its own inherent energy. We say it acts by catalysis, but what this word really signifies no one has yet been able to find out. Organic bodies capable of producing changes in other bodies by their mere presence we call enzymes, or ferments. Ptyalin is therefore a ferment, and since it acts on starch, converting it into sugar, we call it an amylolytic ferment. Other related, or identical, enzymes are found in the secretions of the pancreas, intestinal glands and bile. The transformation of starch into sugar in the mouth is scarcely fairly begun before the stomach, with its acid secretion, checks its progress. The amylolytic action of ptyalin can only proceed in an alkaline medium. As soon as the food passes the pyloric orifice and enters the duodenum the pancreatic juice re-establishes the checked work, and continues with the same until complete. Within the stomach the proteids become the subject of chemical change for the first time. Here, under the action of the gastric juice, they are converted into a highly dialysable substance called peptone. The active agents in this conversion are hydrochloric acid and another enzyme, known as pepsin. The exact nature of the proteolytic change wrought by the gastric juice in converting substances like albumen and fibrine into peptone is not yet well known. Whether a molecule of peptone is equal to a molecule of the original proteid plus a molecule of something else, or whether it is but a fragment of the original molecule, is unsettled. The general belief among physiologists, which has been fortified by a number of facts bearing such an inference, is that the change, like that which occurs to starch in the presence of ptyalin, is a hydrolitic one. Peptone would thus be a proteid, or a fraction thereof, plus a molecule of water.

As all starchy substances are not converted into glucoses in the mouth neither are all proteids converted into peptones in the stomach. Beyond the pyloric orifice, both proteolytic and amylolytic changes are continued and carried on to completion. The pancreatic juice, besides containing a glucose forming ferment, has also a peptone forming one. The latter bears the name of trypsin. Unlike pepsin, it does its digesting in an alkaline solution. The chief products of both seem to be the same and answer to identical chemical reactions, but they are supposed to differ somewhat in structure. Whatever may have been the selective forces that brought about our present modes of digesting, they have certainly endowed us with quite an efficient and rather interesting power of adaptation to the dangers of bacteria invasion. Microbes adapted to neutral abodes thrive illy or entirely perish in acid or alkaline ones. Those fitted for alkaline conditions are unadapted to acid or neutral ones. Those at home in acid surroundings are entirely out of their element in neutral or alkaline ones. Their relations to each other are like fresh water fish in salt water and salt water fish in fresh water. Death must sooner or later ensue. In our mouths we find an alkaline fluid that tends to arrest, as in a trap, all acid-loving bacteria, while encouraging the growth of the alkaline-loving. In our stomachs, during the meal hours, everything is drenched with an acid solution, and all alkali-loving bacteria present find this a very unfavorable environment. Those not killed or damaged by the first treatment are likely to be by the second, and, should any escape both, at the third another change to alkaline occurs that is likely to finish the more persistent. Thus are we ordinarily guarded from the invasions of foreign microscopic foes. The presence in the stomach of some kinds of micro-organisms is supposed to facilitate digestion, while others are known to hinder it. This, however, is a question still *sub judice*. The fermentation due to their presence may aid in fitting some kinds of food for assimilation. Usually they may safely be classed as enemies instead of friends. The spores of ordinary moulds, the bacteria of putrefaction and those that produce acetic acid, lactic acid, butyric acid and alcohol are amongst the most common. It is difficult to see wherein any of these can benefit us. About the only thing they hold in common with pepsin, ptyalin or trypsin is the name ferment. Our early, crude classifications grouped them all together under a common title, because they all had the power of setting up chemical changes, and continuing the same indefinitely, without apparent diminution in their quantity. We now know that their processes are quite unlike, except as viewed superficially. The micro-organisms utilize the substances they attack, consuming some of the same as food for their own growth. Their power is maintained by multiplication of numbers. The chemical changes they initiate are usually due to their destroying molecular equilibrium by feeding upon the complex molecules. The ferments of digestion are not living things, have not the power of self-multiplication, require no food, and establish chemical change by mere contact with the changing bodies. They seem to defy the correla-

tion and conservation of forces by utilizing energy without consuming it. They appear to spend their dollars and keep them, too. Ferments of this type are far from rare, and with every advance of knowledge in the field of organic chemistry their numbers seem to multiply. Plants, as well as animals, contain them, and a goodly number are produced by bacterial activity. Because of their obtruding their strange power in so many quarters, we can readily see that there must be questions involved in a complete answer as to what constitutes digestion that are very far reaching. The function of an organized ferment or enzyme, whatever it may be from the chemist's standpoint, is a very large one from the biologist's. It takes an active part in both physiological and pathological processes. The mouth, stomach and pancreas are not the only places where such bodies are produced or are actively at work. The most important activities of the liver and blood depend upon them. They build up and they pull down. Albumen itself owes its existence apparently to their power. The old notion that the vegetable world constructs the higher organic molecules and the animal world can but destroy them is no longer tenable. The synthetic products of the latter are at least as numerous as those of the former. Low compounds are elevated to high ones by animals as well as plants, but the source of energy of the animal is the food which is mainly the product of the plant.

The enzymes or chemical ferments have been divided into five classes, according to the kind of changes they bring about. They are the sugar forming, peptone forming, albumen forming, glycerine forming and ammonia forming. As examples of the sugar formers we have invertin, emulsin, myrosin and diastase. They all cause hydrolysation of the bodies over which they have chemical power. Invertin is a product of both animals and plants. It converts cane sugar into dextrose and levulose. Emulsin is found in a number of plants and is quite abundant in almonds where it sets free benzoic aldehyde and hydrocyanic acid by destroying amygdalin. Its great function is the hydrolysis of the glucosides, glucose being a constant product of the change. It converts coniferin to coniferyl alcohol, arbutin to methylhydroquinone and hydroquinone, salicin to saligenin and helecin to salicylic aldehyde. Myrosin is found in mustard seeds and by its power the essential oil of mustard, sugar and a sulphate are released from their chemical fetters in potassium myrionate and myronic acid. Diastase has been more thoroughly studied than any other member of this group. It is found in all kinds of malt, and enables that substance to change starch into dextrin and sugar. Like all other enzymes, the difficulties attending its purification are so great that we have not yet succeeded in getting a sample that could be depended upon for the determination of its chemical formula. It contains carbon, hydrogen, nitrogen, sulphur and oxygen with an ash from its impurities. As found in the market, it is an amorphous powder that has been separated from its grosser impurities by repeated solutions in water and precipitations by alcohol. Carbon dioxide increases its amylolytic power while most metallic salts, strong acids, strong alkalies and a number of organic substances inhibit its activity or if in sufficient quantity even prevent it. Among the peptone formers we have besides pepsin and trypsin such substances as papain, bromelin and the unnamed digesting agents of plants from the natural orders Sarraceniaceæ, Droseraceæ and others that contain carniverous species. Papain is a vegetable pepsin from the pawpaw and bromelin is another that exists in the pineapple. The juice of the last named fruit is now extensively used for digesting the fibrine of beef for use in a number of food supplies for convalescents. Papain and trypsin digestion, besides yielding peptone, are found to produce crystalline compounds like leucine. Bacteria have been found that yield peptone producing enzymes but not in great abundance. Of albumen forming ferments we have that of the liver, the blood and chymosin. The vegetable world supplies us with examples in the artichoke, black pepper, sorrel, Canada thistle, patience dock and others. Some species of bacteria produce bodies that behave like chymosin in this particular. Of glycerine forming ferments we have pectose and an unnamed body found in the pancreas. Of ammonia formers one has been described that decomposes urea.

All these various kinds of ferments seem to be soluble in glycerine, precipitable by strong alcohol, difficult to obtain in a condition of purity, exist in very minute quantities, are inhibited by certain metallic salts, contain nitrogen in their composition, controlled in their action by heat and cold, destroyed while wet by temperatures below 100° C., but able to withstand if dry temperatures up to or beyond 150° C. and they are all non-dialyzable colloids. Many of them are known to produce their results by adding to the molecules of the substance changed the hydrogen and hydroxyl of water. All the rest are believed to act in the same manner. Dilute mineral acids often perform a similar function in the ordinary reactions of the laboratory. The conversion of starch into sugar by union with the radicals of water conditioned by the presence of muriatic acid is a case of the kind. The change of acetamide into ammonium acetate by virtue of the presence of the same substance is another. This reaction can go on slowly without the acid but is materially hastened by its presence. As written out it stands thus: $CH_3.CONH_2$ (acetamide)+H_2O (water)+HCl (muriatic acid)—$CH_3.COONH_4$ (ammonium acetate)+HCl (muriatic acid). Here it is observed that the acid takes no part in the

results that can be written into the equation. The acetamide is composed of the two compound radicals CH_3CO and NH_2, and these are united by weak chemical bonds. Water has for its radicals hydroxyl (HO) and hydrogen (H). The presence of a substance, whose attractive power is great for some one product of such a change, will be either the means of overcoming the resistance to such a change or facilitate the same when spontaneously started. In this case the strong attraction for the NH_2 of the acetamide and the H of the water, as ammonia by the muriatic acid and the other radical of the acetamide having a similar attraction for the hydroxyl of the water, the equilibrium is quickly broken and the change hastened. Once the acetic acid has been formed, its affinity for the newly formed ammonia is greater than and overcomes that of the muriatic acid. The latter substance is, therefore, left unaltered. All the enzymes are supposed to act in some such manner as this. The additional water molecule, in the structure of the new substance, generally renders it more soluble in water and hence more easily transportable through the organism. Colloid bodies are thus changed more into the nature of crystallizable ones by pepsin like ferments and thereby enabled to dialyze through membranes.

Our three typical enzymes of the digestive tract in man are products of the respective glands from whence they come. Ptyaline first appears in the salivary glands, pepsin in the peptic glands and trypsin in conjunction with a ptyaline like ferment and a fat decomposing ferment in the pancreas. None of them exist in the blood except when carried there during digestion. Pepsin exists first in the form of propepsin and only changes at or about the time it forms part of that working fluid, the gastric juice. The others have probably similar preceding stages. The demand for pepsin created by its uses in dissolving diphtheritic membranes, producing peptones and peptonized foods, as an aid to digestion in chronic gastritis and as a help to invalids in various ways has caused its production as an important article of commerce. It has thus come to be, in some respects, the best known and most thoroughly studied of all the enzymes. Hundreds of pounds weight of its most highly concentrated forms are annually sold in the United States. These are known as pure pepsin, and yet in spite of their great concentration we have reasons for believing that the best of them only contain from two to two and a half per cent. of true ferment. The average samples of saccharated are ten to twenty times weaker. These pepsins are regularly collected from the stomachs of hogs slaughtered under conditions of hunger and tantalus like displays of fragrant food. They are freed as much as possible from contaminating impurities by a number of processes that are patented by their respective users. Some of them retain a large amount of mucus and others an equally large quantity of peptone. The former are insoluble or but slightly soluble in distilled water and imperfectly soluble in acidulated water. They are generally loaded with the bacteria of putrefaction or their spores and decompose into a disgusting mass in a short time. The latter are very soluble in either distilled or acidulated water and possess a bitter after taste. The best qualities are in thin, pale yellow translucent scales or in fine, white, nearly dry powder, having a peculiar but not disagreeable odor and taste. The poorer qualities are quite hygroscopic and the better ones scarcely at all so. The hygroscopic ones are liable to quickly become putrid as with those containing mucus in excess. That the use of pepsin in many instances is merely the result of habit or fashion among medical men rather than any benefit they secure from it for their patients, is apparent to any chemist who scans the prescription file of any drug store. The quantity usually ordered is ridiculously small to begin with, and when they have put with it bicarbonate of soda or other alkaline substance, their prescriptions display a pitiable lack of knowledge of its nature. The moment any pepsin becomes alkaline it is irretrievably ruined. It is then absolutely inert and has no more power as a digesting agent than powdered brick-dust. The natural alkalinity of the white of an egg, small as it is, will destroy the proteolytic power of twenty times more neutral pepsin than is necessary to digest it in the presence of a proper amount of acid. Nor can the power ever again be restored to such altered pepsin. With trypsin an equally unreasonable course is pursued. In an acid solution with pepsin this substance is totally destroyed, the other ferments of the pancreas sharing a like fate. On the basis of a theory that fails to recognize this fact, these substances are constantly prescribed together. So common, indeed, is the habit that one of the best selling and most often used articles of the drug store is a proprietary combination of this kind. It is not at all unlikely that in spite of protests these gentlemen will go on doing this thing and giving testimonials of the miraculous results they have had with the same. When Mr. Jones or Mr. Brown testifies as to the merits of the democratic supplies we are pleased to call patent medicines, these same M. D.'s will denounce them in no unmeasured terms. If pancreatin is to be prescribed, it should be coated with salol or some other substance insoluble in the gastric juice. If pepsin is to be given, it should always be in an acid medium. Other acids beside hydrochloric will aid pepsin in its work of digesting, but none do so well. With either too much or too little the activity is retarded, but the quantity required for the best results varies with different acids. Next in efficiency to hydrochloric acid comes phosphoric, but whereas the former acts best when only 0.2

per cent. is present, the latter shows its greatest power with 1.0 per cent. The relations of the powers of various acids in aiding pepsin as found by this author are about the same as the relative velocities of reaction of these identical acids. The more rapidly an acid reacts with such substances as it has an affinity for the greater seems to be its power in aiding the proteolytic change. A comparison of Prof. Ostwald's results with the reaction velocities and mine with peptonization reveals this relationship. (*Vide N. Y. Medical Journal*, November 27th, 1886, and *Outlines of General Chemistry*, Macmillan, 1890, page 354.) With the exception of phosphoric acid all others hinder the formation of peptone in the presence of muriatic acid. Chromic, picric and molybdenic are among the worst inhibitors. One part in thirty thousand of any one of these will hold digestion back tc four or five times its normal rate. A pound of meat that should digest in two hours will not digest in eight hours if a quarter of a grain of chromic acid is mixed with it. Fortunately no one is likely to prescribe such a dose. All sorts of remedies, however, when administered at meal time have more or less of a retarding power. This was first proven in the test tube and flask and afterwards in the stomachs of animals. The results of these experiments are of the utmost importance to physicians, and fortunately can be summarized in a few brief rules. Every substance that reacts with muriatic acid completely checks digestion until enough acid is again added to permit the work to proceed. No physician should, therefore, ever be guilty of prescribing reduced iron, carbonates, hydrates, or alkaloids at meal time and it is wise to avoid giving mineral salts, or the metallic salts of organic acids at the same time. Every one of these has a marked deleterious influence on the power of pepsin when they are given in appreciable quantities. The least injurious of the last named class are the citrates and tartrates of potassium, the tartrate of sodium and potassium, the phosphate of calcium and the acetate of lead. The salts of calcium usually retard but little. The sulphates all have a high retarding power and the salicylates follow close upon them. Highly oxygenized bodies are active inhibitors as is seen by the chlorates ranging far above the chlorides. All substances capable of precipitating albumen from solution rank high in the same direction. Such essential oils as wintergreen, sassafras, clove, bitter almond and cinnamon are in marked contrast with sandalwood, cubeb and turpentine, the latter scarcely possessing any inhibitory power and the former a full share. Glycerine and sugar have but little. Essential oils from plants of the same natural order generally display the retarding power to a nearly common extent.

All enzymes are arrested in their activities by low temperatures, but enhanced by a rise in the same until they reach a point where further increase in heat lessens their power again. This point varies with different kinds from about 40° C to, or a little beyond, 60° C. Between 90° C and 100° C their power, if in solution, is totally destroyed, and by no known process can it be restored again. In the case of pepsin certainly, and possibly with all the rest, a coagulation occurs at the point of destruction of something in the solution. The writer was the first to point out that this coagulated material is always directly in proportion to the proteolytic power of the pepsin present. Previous to this discovery it had generally been assumed that the material that coagulated was albumen. That it does not behave like albumen is seen by its refusal to precipitate with nitric or salicylic acids, and in its appearing under conditions that do not reveal albumen. Solutions of pepsin that are antiseptic spotaneously precipitate a substance of the same character by ageing. This precipitate is also always directly as the proteolytic power when time enough has been given for all to go down. Strong ether in a couple of months will abstract from a grain of pepsin a similarly-appearing substance, whose volume always appears to be proportioned to the original value of the pepsin used. The pepsin, in the meantime, although still bearing in outward appearance its original integrity, will have lost much, or nearly all, of its digesting power. Every available American, English, French and German brand of pepsin has been subjected to this coagulation test, followed by a determination of proteolytic power, and in no instance has there been a failure to get signs of coagulation. Weak, saccharated brands, and one brand heavily charged with mucus, failed to give a precipitate, because of the thickness of the solutions they form. But even these showed positive evidence of coagulation by an increased milkiness on boiling. On the first publication of these results a New York pharmacist declared he would prove within a month that there are good pepsins in the market that do not coagulate with heat. A few weeks later he cited the names of an American and a German brand. Both of these have since been carefully tested, and found to do just as all the rest have done. The American is a saccharated, and the dense solution of sugar and contained mucus hinders precipitation, but not coagulation. The German brand answers so completely to the test that its assay by this process is quite easy. If his samples failed to respond, they certainly did not represent the goods now upon the market, and have been of very inferior quality. In determining the relative value of pepsins, this coagulation method must eventually take the lead of all others. It shortens the assay from six hours to less than half an hour, and will eventually become much more satisfactory in its results. The only objection to its im-

mediate adoption comes from the tediousness of filtering mucus-laden goods, and their failure to promptly precipitate when but minute amounts of absolute enzyme are present. Since such goods are the very ones that are laden with bacteria, and are calculated to set up putrefactive changes in the stomach like those they establish out of the stomach, it is but a matter of time for them to give way before better articles that are soluble in distilled water. If the coagulable material of pepsin was albumen, these brands are the only ones that should show it, since they are prepared by the only process that could admit of its presence. The freely soluble pepsins are so treated that all albumen they are likely to have contained is converted into peptone. Manufacturers of inferior goods will naturally cast discredit on this process of assay. Its simplicity makes pepsin examinations so easy that the pharmacist's apprentice can do it. Some of them have already taken pains to refer druggists to "Foster's Physiology," where it says: "At present the manifestation of peptic powers is our only test of the presence of pepsin." This statement was true two years ago, but it no longer holds good. The presence of such a coagulating material not reacting to the other tests of albumen is now a new, and soon to become a better, means of telling its presence. For convenience in reference, this coagulated material from pepsin has been called peptose. It is the first opening of a door that has so far presented itself for means to determine the chemical formula of any enzyme, and will no doubt soon be utilized in this direction. It may prove to be pepsin plus some other unknown radical, or a fraction of a decomposed pepsin molecule. In either case it gives us the first opportunity we have ever had of getting an approximately representative sample of any part of an enzyme for a percentage determination of structure. By following up the cues derivable from such an investigation, we are likely to gain some light concerning the proteids generally, and the ferments particularly. That such light is sadly needed we all know, and every new advance in bacteriology and physiological chemistry emphasizes this need. When we find the enzymes opening up the gates both to life and death we are fully startled into its appreciation. Even in the midst of putrefaction and decay they are found performing their hydrolytic function. In and out of the body, amid all organic changes, both progressive and retrogressive, they appear as the directing powers of both plant and animal. What constitutes digestion in ourselves is but an example of a universal process that makes life possible in every form. To solve the first riddle is to be on the correct way toward the true solution of the latter.

Dr. Geo. Taylor Stewart, chief of Staff, reports 850 patients treated at the Ward's Island Hospital during December, with a death rate of 2.85 per cent. For the year 5,070 patients were treated, with a death rate of 5.17 per cent.

SUICIDES IN INDIANA DURING 1891.

BY W. B. CLARKE, M. D., INDIANAPOLIS.

Filled is life's goblet to the brim;
And though my eyes with tears are dim,
I see its sparkling bubbles swim,
And chant a melancholy hymn,
With solemn voice and slow.—*Longfellow.*

A WAVE of suicidal mania has been sweeping over the United States with great violence for several years, but in what portion of the country its destructive effects are most pronounced would be a difficult question to decide. Nearly three years ago the thought came to me that Indiana's capital was having more than the usual proportion of suicides, as compared with cities of like population, and so, for my own information, I arranged on paper a tabulated form showing the statistics regarding each suicide attempted in Indianapolis during the year ending May 1, 1890, the list being made up from clippings from the newspapers of the city. This list comprised eighty-seven attempts (only thirty-one being successful, poison being used in sixty-four cases), but its report will not be attempted here. On scrutiny of the annual reports of the State Board of Health, in the light of the result of the investigation above alluded to, I became convinced that the State's suicide statistics were woefully meager and incomplete, and decided to verify that belief by keeping a State list of suicidal attempts for a year in the same manner. This list was completed at the end of October, 1891, the Board of Health year ending then, and comprises 427 attempts.

Of course no claim can be made that the report is anywhere near complete; indeed, the exact opposite must be claimed, and for the following reasons: (1) My clippings were made from the Indianapolis papers, and it is quite reasonable to assume that a number of cases reported in remote parts of the State failed to be noticed by the exchange editors or the telegraph; (2) as I was out of the State several times for a few days at a time during the year, it is likely that some published cases missed my notice; (3) my list embraces only cases published as suicides, and takes no account of sudden deaths, found deads, or mysterious disappearances, some of which were probably suicidal in character; (4) there are four insane asylums and two penitentiaries in the State, and it is not the fashion to loudly herald suicide news emanating from such institutions—and perhaps no cognizance should be taken of intra-asylum, penitentiary or jail cases in such a report as this any way; (5) every physician will probably agree with me that at least a third of the attempts at suicide are never described in the newspapers, because of the family desire to smother such news. It may be well to state that I have the authoritative newspaper clipping re-

garding each one of these 427 cases, each month in an envelope by itself, and, as can well be imagined, many a gruesome tale is there locked up—a vein of richness fit to be worked by novelist, humanitarian, philosopher, statistician, alienist or any student of the matter in hand. Many a tale of woe is there told, and quite a number of the cases of suicides were preceded by a ghastly tragedy.

This list was condensed for a newspaper's use by giving each case a paragraph, stating name, age, occupation, residence, date and means used, and, with the table of recapitulation and the explanatory introduction, made a little more than four columns, as published in the *Indianapolis News*, November 6, 1891, the various totals being as follows:

Statistics of Indiana Suicides for the Year ending with October, 1891.

Attempts	427	Successes, males	231
Successes	283	Successes, females	52
Failures	144	Failures, males	80
Males	311	Failures, females	64
Females	116		

The means used in these 427 attempts are shown as follows:

Shooting	84	Poison	18
Morphine	61	Stepping before train	17
Laudanum	18	Rough on Rats	13
Hanging	53	Strychnine	11
Not stated	38	Arsenic	7
Drowning	37	Paris green	6
Cutting throat	25	Chloroform	5

and four each by jumping from window and chloral, three each by carbolic acid, belladonna, and cremation, two each by butting a wall, cutting wrist and stabbing breast, and one each by jumping from cars, corrosive sublimate, camphor, turning on gas, chloroform and carbolic acid mixture, cantharides, oil of tansy, starvation, cyanide of potassium, eating match-heads, and chloroform and morphine mixture. Poison was used 157 times, including "rough on rats," an article that ought to be interdicted because of the numerous dangers of having it around, it not subserving any good purpose that other harmless and equally rat-effective preparations will not. To this poison number (157) must be added some from the "not-stated, 38" column. The fatal results, too, probably number more than the 283 reported, for the reason that among the actual fatalities are included only those so reported, though the expression "can not live" occasionally occurred in the newspaper reports.

"Suicide" was the text of a paper read by me at the annual meeting of the Southern Homœopathic Medical Association, at Nashville, Tenn., last November, in which the foregoing statistics were incorporated. This paper contained a partial résumé of the symptomatology of a few of our leading remedies for the condition usually called a mind diseased, especially where the suicidal tendency is present, and closed with the recommendation that some brother in each state in the union take upon himself a labor for the year 1892 similar to the one just described, so that with the information thus obtained a report could be made up of the extent to which the frightful and abnormal development this malady of cultivation has really reached in this country. That paper reposes "in the archives" of the society, and its closing suggestion is, of course, not at this late date available as far as 1892 is concerned.

As the preceding report embraced all of 1891, except November and December, I thought best to complete the year, and find sixty-two attempts in those two months, three more than those months in the report, thus showing that the actual total of 1891 was just 430. The later figures do not need dissection here, as they do not vary materially from the original report.

Now, the first thought which strikes an outsider in regard to this ghastly report seems to be that Indiana is a very "unhealthy" place to live in, if not, indeed, a very "desirable" place to die in. But I very much doubt if this showing is worse, in proportion to population, than would be shown in other States if the test were made. The bounty of nature during the season just passed has been something phenomenal, and the conditions otherwise have been unusually favorable to longevity. I will not here endeavor to trace effect to cause, except in one particular, nor try to fully indicate where we shall look for relief in an endeavor to minimize the baleful influence of this Moloch stalking in our midst, this imitative-craze death-producer which is causing so much of grief, disturbance and demoralization.

These newspaper reports were meagre as to causes "of the rash act," occupations and many other points of interest, and if it were otherwise their depiction here would too greatly lengthen the article. The professions were well represented, the medicine and the ministry having six each, and the law three or four. But the farmers led all as far as occupations were reported, and this because Indiana is a great State agriculturally, and because a monotonous, humdrum life is not good for the mind. Farmers are more likely to select hanging as the "route" (as the reporters say) of departure, probably because it is the handiest way in the country at a distance from the poison-shops, and then that mode does not "muss up the track so" (as the engineer said) as does shooting. The youngest suicide was a boy of twelve and the oldest a man of ninety-two. A writer in the New York *World* makes the amusing statement that the negro is never known to attempt suicide. Well, in my clippings I have the names of half-a-dozen. He qualifies his statement by saying that he means real negroes. If blackness is any test, I can say that at least two were as black as they make them. That writer

evidently had not read that dispatch last summer about two or three captive African princes, who were on board ship en route to "civilization," and who had to be bound to prevent them from throwing themselves into the sea, preferring death to captivity.

The single reference to the causation of suicide I wish to make here brings up the question of indiscriminate and heavy self-dosing, a practice all too prevalent in the wild west, and one that has grown woolly with age. This point was touched on in my paper, "The Brain Dangers of Quinine," read before the Missouri Institute of Homœopathy and published in the April and May, 1891, numbers of the *American Homœopathist*, as follows:

"I feel confident that a frequent cause of suicide has been generally, if not entirely, overlooked, and so am impelled to utter a word of warning regarding it, *viz.*, the reckless use of quinine, especially its use unauthorized by a physician. Any one who knows the pathogenetic ability of quinine, or rather its ability to cause symptoms or perturbations in the well or nearly well person, especially brain and nerve symptoms, can not deny that it possesses the power to produce a condition nearly allied to insanity, if, indeed, it practically falls at all short of insanity. In large doses it is a depressant, instead of a stimulant, contrary to the popular belief, and it is the most popular and universal every-day amateur remedy. Everybody seems to take it, and for any and every ailment. For want of space I can not further elaborate this point (as it rightly calls for a sanitary article of its own), but it is reasonably easy of proof that many insanities, suicides and murders can be traced directly to the ill-advised and inordinate use of quinine."

Reference to a means of prevention which might prove useful, but which is not adopted, is one touching the pocket of the suicide or his family. Repressive measures have been useful in the past in other countries, but such are too severe for this enlightened age, as, for instance, nailing to the cross, as the Romans did, dragging the naked body through the streets, as the French did, and burying at the cross-roads with a stake driven through the body, as the English did. New York arrests and punishes those who fail in securing death in such a way, thus offering a premium on thoroughness. A report as to the usefulness of this repressive measure would be interesting, if there are figures to compare it with. A floating item states that 192 arrests on a charge of attempted suicide were made in New York City during 1891. England still confiscates all property found on the body of a suicide, and the Catholic Church the world over refuses that body burial in consecrated ground. I believe it would be a wise move to have a searching coronial inquiry of every such case, all of the expense of which should be borne by the estate of the deceased or by his relatives, the final disposition of the remains to be at the expense of relatives, and failing in this the body should be turned over to medical students for dissection, or surgeons for experimentation. Say Indiana had only 300 suicidal deaths (and there were many more, counting the "smothered" cases), and the average coronial expenses were $25, an expense was saddled upon the surviving public co-sufferers of $7,500, to which must probably be added as much more for later expenses. But all this is only theorizing.

It may be that suicide, at least the attempt, is easier in Indiana than in most States, because we have no pharmacy law and no regulation of the sale of poisons. I have suggested the passage of such laws as worth consideration, because of their possible good effect in checking the evil. It may be urged that it would not check it, because if a person really resolves to commit suicide it will be done some other way, but I believe there is a natural shrinking from the more startling and public forms which will deter many women from attempting them. Such laws will at least relieve the physicians of an immense amount of charity stomach-pump work, so some one will be benefited. Personally I "ran up against" only two cases in 1892 (out of Indianapolis' eighty), one being a woman with morphine, the other an "old soldier," despairing of getting a pension, who, being a tinner, took the soldering fluid used by his tradesmen—chloride of zinc, made by dissolving zinc in muriatic acid—both cases recovering.

Owing to a pressure of other duties I have not been able to systematically arrange many interesting points running through this collection of clippings, but hope to be able to do so at an early date. One point that the study of this subject has impressed me with is, that we have in this matter of suicide a most important question to deal with. We think we are familiar with it as we glance at the papers day by day, but I believe that few realize to what proportions the widespread evil has attained. It pervades all ranks, and, if we may believe the reports, no one is really safe, much as he may fancy he is. Even the courts have legalized it, as several life-insurance companies have found out to their cost. It would seem the duty of the medical profession to put a little more general study into this question, in the hope that good would result. Who will evolve the plan that will minimize the evil? Whether man, who has no voice in the matter of entering this world—

> "Fashioned and shaped by no will of his own,
> And helplessly into life's mystery thrown;
> Born by the law that compels men to be
> Born to conditions he could not foresee"—

has the legal and moral right to determine when he shall quit living in it is a question which anthropologists have disputed over for ages, but I believe we should, in studying the subject, take

the ground, and steadfastly maintain it, that he has not that right. We will thus show forth a reason for the faith that is within us—that faith being that there is some way to decrease the appalling number of felodeses in our fair and peaceful land.

THE IMPORTANCE OF A PURE MILK SUPPLY, AND ITS RELATION TO DISEASE.

By Wilton Guernsey Berry, Ph. B.,
Assistant Chemist, Health Department, N. Y. City.

WHEN we come to realize the amount of milk brought into a large city like New York, and consumed by the community, we can then appreciate the value and importance of a strict supervision in securing a pure and healthy article of diet. As we know, there is not a family but what makes use of this important factor in larger or smaller quantities, both in the domestic economy of the household, and in many cases in sickness and the rearing of the young.

Especially in the latter cases, is it essential that the milk should be of the purest and of the best quality available. When in sickness the health and life of the patient depends upon a nourishing and palatable food, to be obliged to feed them instead, a diseased or watery fluid or one rendered poor by the removal of the rich constituents contained in the cream, is an alternative against which every citizen is entitled to cry out in the strongest terms. The little helpless infant, dependent upon the charity of others to furnish them with a genuine and rich article, would stand a poor show, unless watchful eyes were ever on the alert to protect them against persecution.

Let us glance for a moment at the average daily consumption of milk in this city. There are numerous railroads terminating in and around New York, each one of which pours in its quota to swell the grand daily average of about 20,000 cans, or for the year 1890—6,278,782 cans, being equivalent to 251,151,280 quarts. This is an enormous quantity, and one can readily see that it requires perseverance and diligence on the part of those whose duty it is to see that none of this is sold in an adulterated form. Under the supervision of the Health Department, the city is divided into seven inspection districts, which include the four to five thousand stores where milk is sold, and divided in such a manner that each of the seven inspectors have approximately the same number of stores to inspect. Each of these stores is kept constantly under the supervision of the inspectors who test the purity of the milk in each can found in the store. If in their judgment after testing the milk is sufficiently adulterated to warrant being destroyed, they immediately do so, protests notwithstanding. In either case a sample of the milk is taken and delivered at the Department laboratory for analysis as a confirmation of the adulteration. A sealed sample is left with the milk dealer, for analysis if he desires. In summer it is also the duty of the inspectors to make daily early morning inspections (4 to 8 A. M.) of milk wagons when delivering the milk to the various houses on the routes. Again, except in very cold weather, when there is danger of the milk being frozen, night raids are held, when the inspectors, *en masse*, pounce down upon the unsuspecting drivers of milk wagons coming over the ferries, or upon the trains at the railroad depots, and go through the entire consignment. The raids are held frequently each month, at times known only to the Department and last usually from 11.30 P. M. to 5 A. M. In this way the dealers are taken unawares and a fair judgment may be made of the state of the milk coming into the city.

A steady increase in the purity of the milk has been taking place from year to year owing to the vigilance of the Health Department, as may readily be seen by a comparison of the two previous years:

	1889.	1890.
Number of inspections	44,511	58,721
Number of specimens examined	63,240	97,040
Number of quarts destroyed	6,284	3,708
Number of arrests	323	299
Amount of fines	$10,535	$7,400

From the above table we see that in 1890 more inspections were made and more specimens examined (due to the increase in number of dealers) than in the previous year, and yet a much smaller quantity of adulterated milk was destroyed and the amount of fines much smaller, showing a wholesome fear for the arm of the law when properly enforced.

A milk dealer of doubtful reputation soon finds that it is not to his advantage to be brought up and fined $25, $50 and $100 and possible imprisonment, but more advantageous to conform to law and equity and furnish a good article. Many are under the impression that all the bad milk is adulterated by dealers in the city. This is an erroneous and false impression, for as a matter of fact from eighty to ninety per cent. of all the skimmed milk sold in the city is skimmed before it comes within the city limits, either on the farms or at some of the numerous dairies. This, however, makes no difference in the end, as it is not necessary to prove who adulterated the milk, the simple fact of the dealer having it in his possession makes him culpable. Section 186 of the Sanitary Code reads as follows:

"No milk which has been watered, adulterated, reduced or changed in any respect by the addition of water or other substances or by the removal of cream, shall be brought into, held, kept, or offered for sale at any place in the City of New York; nor shall any one keep, have or offer for sale in the said city any such milk."

It is the business and duty of every person dealing in milk to provide themselves with a pure

and wholesome article, and any one not competent to do so is not fit to be trusted with the dispensing of such an important article of food. By adulteration of milk is meant, the addition to normal milk of water, the partial removal of cream, or both, and the addition of such substances as preservatives which may be injurious to health. Normal milk consists of water, fat, casein sugar and certain salts, all varying within certain well defined limits, and it is a comparatively easy matter for the chemist to detect the presence of any foreign bodies, or the absence of any of the constituents which should be present.

Another very important matter, aside from the simple adulteration of normal milk, is the condition of the cows, their food and the surroundings of the herd in the production of a healthy and normal milk from the cows themselves. A great deal has been said for and against the theory that contagious diseases are spread by the consumption of milk from diseased cows, and space would hardly allow of a lengthy discussion on the subject. A healthy cow may at certain times produce a milk which is unhealthy. This is due to the presence of "colostrum" and occurs for a period after the birth of the calf. It is owing to the too hasty milking of the cow after giving birth to the calf that milk containing "colostrom" is found on the market, and this should be carefully guarded against. The presence of this foreign body may give rise to serious consequences to those using the milk from such cows, especially in the young and sickly whose digestive organs are still weak and sensitive to such purgative influences. It is of great importance in the first place that the cows should be kept in a healthy condition, as there is no doubt that all milk from unhealthy sources should be at once discarded until positive proof has been shown that disease may not be transmitted by these means.

The most common complaints prevalent among cows are pleuro-pneumonia and tuberculosis, and a careful inspection of the animals should be made at regular intervals, and at the first signs of trouble they should be separated from the herd and treated for the disease accordingly.

Various abnormal milks may be noted, due either to disease, to reckless feeding, or unclean surroundings. In cases where the kidneys are diseased, or the nipples and udder are lacerated or ulcerated, a peculiar red milk is produced which contains blood and mucus. Beyond a certain age differing in individual cows, a disagreeable bitter milk is produced owing to inactivity of the glands, and giving rise to serious disturbances in the human system. Uncleanliness in the dairy may also give rise to the same result. Sandy milk is a peculiar condition of the fluid, containing small granules of sand. The cause is not definitely known, but is probably due either to improper feeding or disease of the animal. Stringy milk may be caused by improper feeding and exposure to cold. It contains an abnormal amount of albumen and has a stringy mucous appearance. Reckless feeding produces also the so-called "blue milk" which is unhealthy to drink, and is due to a fungus growth in the milk, appearing upon standing for some hours, and causing a decomposition in the casein. Dairies which are badly ventilated and unclean cause the milk to sour, which being mixed with the good milk causes that also to deteriorate.

We thus see from the above facts that great cleanliness and judgment in selection of foods is required in the successful production of a wholesome and pure article. Mr. E. W. Martin's exhaustive treatise on milk and its adulterations is an interesting work to consult in this connection. It is interesting to note that the color, odor and taste of milk may be varied and modified by the feeding of certain plants. Wild onions, ramsons, wormwood rape, hyssop and black hellebore impart a decided taste, and madder, sedge, scouring rush, buttercup, wild carrot, rhubarb, water violet, common knot grass, and buckwheat produce various shades of red, yellow and blue to the milk. We must not overlook the necessity of selecting a pure and uncontaminated source of water supply to be fed to the cows, as many instances have been cited of disease being transmitted, and traced back to the source of water supply as the cause. Typhoid and other fevers are especially liable to be carried in this way due to the water being in the neighborhood of outhouses or contaminated by sewage.

The necessity can thus be seen of selecting a proper source for the milk supply of the young and for invalids, as so many factors play an important part in the final condition of the milk. The physician would do well to take these facts into consideration when treating his patients and impress upon them the importance of a judicious selection and that whatever trouble may be incurred in this direction they will be amply repaid for in the end. A few remarks upon the use of the lactometer may be of interest and of use to some. This is a means of detecting adulterated milk, by which any one with a little care and practice may become reasonably sure of success.

The lactometer is a small hydrometer adapted to the specific gravity of milk and water. On the scale the specific gravity of water is indicated by zero, that of average milk by 100 and above, 100 indicating 100 per cent. of pure milk, the space between zero and 100 is divided into equal parts and represents percentage. If, therefore, the fluid has a specific gravity of say 80, it may be safely assumed that at least 20 per cent. of water has been added, if at 85, 15 per cent. has been added and so on through the scale.

To use the instrument, warm or cool the fluid to 60° Fahr. Then allow the lactometer to float

in it, in a glass cylinder, care being taken not to wet the stem above where the liquid rises. When stationary read the percentage on the scale, then take the lactometer out, and observe the appearance of the fluid on the bulb, whether thin and watery, and bluish, also if the taste is flat and watery, if such is the case we are reasonably sure that water has been added. If the instrument floats at some point above 100 and the same characteristics are apparent, the milk has been skimmed or skimmed and watered. If the instrument be placed in cream, it would float at some point below 100 and would indicate watered milk, owing to its low specific gravity (being less than pure milk) but one can readily distinguish between cream and watery milk, so no danger may be apprehended from that source in mistaking cream for watered milk.

If for any reason it should be desired to make the experiment at a temperature above or below 60° Fahr., a calculation may be made which will indicate near enough what it should read at 60° Fahr. Hence this simple rule:

Find the difference between the indicated temperature and 60°, divide this by three and the quotient, if the temperature was above 60°, add to, and if below 60°, subtract from the degree at which the lactometer floats. The result will be approximately correct for 60° Fahr. A judicious use of this little instrument in the kitchen or at the bedside will tend to dispell all doubt as to the genuineness of the milk under observation.

It is to be hoped, and will undoubtedly be demonstrated, that the condition of the milk supply of the city will in the future, show as flattering an increase in purity as it has already done from year to year in the past, due to the indefatigable care and exertion of the Health Department, and those into whose hands the supervision of the supply has been placed.

ON GARGLES AND GARGLING.

By H. S. Drayton, A. M., M. D., New York.

IN THE general practice of medicine the use of gargles as commonly practiced has elements of injury or danger that are, in my opinion, recognized as they should be by comparatively few physicians. Speaking not so much from the point of view of the specialist as from that of a good amount of experience in private and clinical service, I feel warranted in saying that as much harm may result from the improper use of a good throat mixture as from the use of one that is unsuitable. A patient comes to his physician with an acute attack of pharyngitis or laryngitis. The constitutional state may warrant treatment directed at the correction of gastric, intestinal, hepatic, glandular, vaso-motor or other disturbances. Besides, topical applications are deemed necessary, and astringent solutions of one kind or another ordered. The gargarismal selection may be appropriate, yet fail in obtaining the effect that was expected. This especially in laryngitis. I have had many patients who came with a history of acute catarrh that had degenerated into chronic, their hoarse, or rasping voices intimating laryngeal alterations of long standing. They had tried a hundred or more different things, with no apparent benefit. The gargles of iron, alum, chlorate of potassa, boracic acid, borax, soda, benzoic acid, etc., etc., that had received attention, had proved often a temporary alleviation of the discomfort experienced, but nothing more.

I need not raise the question in the beginning of the competency of these patients to perform the operation of gargling in a thorough manner, for it must be plain enough to every physician that one has to learn how to breathe, hold his head and to control the faucial muscles ere he can employ this method of medication with good effect upon the pharyngeal parietes. But if the physician expects his gargarisma to have a direct influence upon the laryngeal membrane in any other way besides by reflex communication, he certainly "counts without his host."

In my clinical attendance I have met with many physicians who appeared to protest against the assertion that gargles were of little service in treating the larynx, until it was shown by reference to the anatomical structure and physiological action of the epiglottis that in gargling the approach to the larynx is so protected by the muscular folds surrounding it and by the upward flow of the air, that little or no fluid can pass down to the voice box. We know that a few drops of fluid dropping accidentally through the larynx into the trachea immediately cause discomfort, if not considerable pain. Further, some patients are incapable of performing the act of gargling because of pharyngeal deformity or extreme nerve irritability.

Hence the true way to treat laryngeal disease is not by the gargle, but by direct applications with the aid of the laryngoscope.

In doing this a good eye, a steady hand and a ready knowledge of the appearance of the voice organism in health and in disease is essential.

It has been very common for physicians to advise a solution of common salt for nasal catarrh and for the throat inflammation that is so much associated with rhinitis. I am of opinion, and have reason to believe, that many ear specialists, as well as nose and throat specialists, recognize the liability to ear disease following self-treatment with such a solution. The patient sniffs up the solution, or gargles with it, then proceeds to clear nose and throat by a violent blowing and hawking; the eustachian tubes are thrown into unusual vibration, some part of the solution is

sucked into one or both of the tubes, and it needs but a few repetitions of this to set up a respectable otitis media, with its probable consequence of deafness.

In clinical work the prescribing of nasal washes for the use of patients is necessary, and many are too poor to purchase an atomizing syringe for the proper application of the wash. So it becomes unavoidable for us to advise these to sniff up the solution, which is made as unirritating as possible, from the hand or a bit of sponge. I am usually careful to advise my patients to be cautious about this, to use but moderate force in the sniffing, and also to avoid violence in blowing the nose or in ejecting inspissated secretions from the throat.

The use of the douche syringe I may be understood as condemning for nose treatment, at least as concerns self-treatment by a patient. The atomizer is vastly superior in every respect. The douche should never be used by an unskilled hand in post-nasal applications, and the specialist rarely finds it *necessary*. What the atomizer can not accomplish with an appropriate solution an applicator armed with a wad of absorbent cotton usually will, and easily. In cases that involve ulcerated surfaces, with their accompaniment of great sensitiveness, the utmost delicacy is needful to thorough cleansing, and the operation is much helped often by the addition of a suitable analgesic to the solution. Here cocaine hydrochlorate comes into play as the most convenient of our agents. But, in prescribing this as an element of a gargle, I should suggest a due regard to the intelligence and habits of the patient, as well as to the nature of the malady. The safe course, to be sure, as Barton advises, is not to trust the patient with the drug in any form, although in some tuberculous and specific cases its exhibition for the relief of pain appears indispensable.

QUININE; SOME OF ITS USES AND ABUSES.

BY ALFRED K. HILLS, M. D.

THE writer is not one of those who places *quinine* as the principal specific in any class of cases. Neither does he overlook its individuality and discard its use altogether, thereby omitting an important remedy in the treatment of cases suspected of malarial origin. At the same time his clinical experiences have been such that he can not remain oblivious to its injurious qualities even while remaining in full view of its beneficence, and he conscientiously believes that often the small dose will accomplish all that can be expected of it, even when specifically indicated. That a massive dose may be required in some cases for certain purposes we will not question, and that this should be cautiously repeated we are equally sure.

According to universally accepted authority, the physiological action of quinine is well marked and sufficiently powerful to have taken human life in several instances.

The dual action of this powerful drug ought to be more carefully studied if we would secure its greatest sphere of usefulness.

It is sufficiently well established that small doses are primarily stimulant and large ones sedative, producing general and universal debility, while in poisonous doses the rapid pulse, coma and stertorous respirations indicate a condition of profound activity, and one which is to be followed by fatal paralysis of central organs.

In moderate doses quinia stimulates the trophic centers and quickens tissue change; but in larger doses the opposite is the effect.

Five-grain doses of quinia increases the energy of the cardiac systole, the elasticity of the walls of cerebral vessels is also increased so that the blood is forced rapidly on through the capillaries, thus diminishing the resistance of the cardiac systole, so that while more blood reaches the brain, at the same time the intercranial pressure is lessened.

A twenty-grain dose diminished the energy of the cardiac contractions, the cerebral arteries remained unfilled, and there was great diminution of the intercranial pressure.

The coagulability of the blood has been found to be lessened by quinia in varying doses, the power of emigration of the white blood-cells is diminished, and the red corpuscles become larger under its influence.

After a large dose of quinia there has been found to be a slight diminution of the red and a marked increase in the number of the white corpuscles.

It is said that ten or twelve grains of sulph. quinine, taken by an adult man during twelve hours, is apt to produce heaviness and confusion of thought, headache, buzzing in the ears, vertigo and unsteadiness of gait. Larger doses cause, in addition, a sense of fullness, tension and pulsation in the head; the face becomes suffused and animated, the eye is bright, epistaxis sometimes occurs, the patient is restless and agitated and complains of muscular twitching in the limbs. After some hours there follows exhaustion, sleepiness, torpor and muscular debility.

Thirty grains daily for several days in divided doses generally produce great depression, apathy, somnolence, unsteadiness of gait, impaired sight and hearing and dilitation of the pupils.

A poisonous dose occasions dyspnœa and noisy respiration, with death, as from asphyxia.

In small doses quinia may stimulate the appetite and digestion, but in large and frequently repeated doses the stomach and bowels become irritated and diarrhœa may follow.

Quinia restricts the functions of the spleen by

restraining the power of forming white corpuscles and the preparation of uric acid for excretion.

As quinia is excreted with the urine to a large extent, we may justly anticipate considerable irritation from its presence in a sensitive kidney, as is often found in patients with malarial affections, as congestion of these organs to more or less extent together with the presence of albumen, is a frequent accompaniment.

The question as to the influence of quinia upon the kidneys and as to how far it may be responsible for various renal disorders, ought to be investigated in order to ascertain whether its continued use in massive dose is not a cause of nephritis.

The oxytocic action of quinia is sufficiently pronounced to make us cautious as to the continued use during the pregnant state. While it does not appear to possess the power of producing abortion when exhibited in the single dose, even if large, at the same time its long continued use depresses the vitality to such an extent that miscarriage may follow in consequence of the inanition which it sometimes produces.

Dr. McLeod, of Shanghai, says that "in three different cases I have had on several occasions to discontinue the use of quinine, because it brought on 'labor pains,' though the doses used were small, varying from three to five grains. In one of these, during a previous pregnancy, another medical man used quinine, and discontinued it for a similar reason. All three were in fair general health, suffering only from slight malarious fever, and had never aborted. One case has come under my notice in which abortion took place, without apparent cause, after a ten grain dose of quinine. The patient was the mother of several children, had not previouly aborted, was in good health, and took the quinine to cure facial neuralgia. I know of another case of abortion occurring under similar circumstances after quinine."

It is said that the Chinese use it for the purpose of producing abortion.

Prof. Binz has formulated the most recent views of our subject as follows:

1. In the present state of our knowledge there are two modes in which antipyretic remedies may be conceived to operate: first, by increasing the discharge of the pyrexial heat; second, by checking its production.

2. The quantity of heat discharged may be augumented by direct withdrawal (tepid water), or by facilitating the circulation through the skin (digitalis, cutaneous irritants).

3. The production may be lessened by repeated cooling of the surface, and especially by the internal use of anti-zymotics.

4. Febrile diseases commonly owe their origin to the introduction and rapid development of substances akin to ferments, several of these have been shown to resemble yeast, in being low vegetable organisms, or derived from such organisms. They enter the glands, where they undergo multiplication, increase the metabolic process, generate products of decomposition which exert a paralyzing action on the nervous system, and raise the standard of temperature throughout the body.

5. Owing to impaired action of the heart in certain stages of the disorder, or to contraction of the cutaneous vessels, the skin becomes anemic, and gives off less heat than usual. The internal temperature rises accordingly.

6. Quinine, our chief antipyretic, acts by directly combatting the efficient cause of the disorder, and by checking the abnormal metabolism going on in the body, the nervous system takes no part, or only a secondary part, in this operation. In intermittent fevers quinine prevents the paroxysms by attacking their ineffective cause. The paroxysms are not the essence—the substantive elements—of the disease; they are only a symptom of it. The substantive element is the poison deposited in the colorless corpuscles of many organs, especially the spleen. There are fevers without paroxysms, and paroxysms without fever. It is just those intermittent fevers which run their course without paroxysms that are the most malignant. The malarial poison rapidly causes disintegration of the tissues and the blood, and so paralyzes the nerve-centers.

7. The reduction of acute splenic tumors by quinine depends upon the adverse influence exerted by the alkaloid on the infective poison to which the morbid over-action of the spleen and its consequent enlargement are due. *Cessante causa cessat effectus.* Even a healthy spleen may be reduced in size by large doses of quinine; the alkaloid vigorously checking the oxidation of its principal elements—the colorless corpuscles. Quinine has no direct influence on the vaso-motor nerves.

8. Quinine attacks the malarial poison with especial energy; on this fact depends the so-called specific action of quinine in intermittent fevers. The same relation, but in a minor degree, subsists between quinine and the infective poison of enteric fever, between mercury and iodine and the poison of syphilis, between salicylic acid and the "irritant" in acute articular rheumatism.

9. An antipyretic which in one disease instantaneously arrests the fever may be wholly powerless in another. The difference depends on the fact that the various anti-zymotics act very unequally on the individual *schizomycetes* and ferments; one will paralyze rapidly, by another they will hardly be ejected.

10. The past history of therapeutics, and recent achievements in the domain of etiology and pharmacology entitle us to assume that by per-

sistent scientific inquiry and practical observation, we may succeed in discovering a specific antidote for every species of infective or septicæmic malady.

The need which has been felt for more exact knowledge of the action of quinine on the heart has induced Mm. G. See and Bochefontain to undertake a series of experiments on animals with regard to this question, as reported in the *London Lancet*. The observations were made in the first place upon both cold and warm blooded animals, and they found that the results were about the same. The first toxic effect when quinine is given by the stomach or beneath the skin is acceleration of the pulse, accompanied by a considerable elevation in the arterial pressure. When administered by the stomach these effects of the drug last for about half an hour. At the end of this time these symptoms subside and the pressure then falls below the normal. The same results are obtained by intra-venous injection, except that the initial increase of pressure is less evident. During this period the heart's contractions continue regular in time and equal in force, but occasionally there is an increase in the degree of systolic contraction.

In a healthy man very little effect on the temperature is produced by quinine. Nevertheless, the process of oxidation in the body undergoes a very considerable diminution. The pulse, however, becomes less frequent, and the blood pressure falls in the arteries.

In the typhoid patient the temperature falls after the first, and especially after the second gramme. It falls a degree and a half in about six hours, and the effect continues for about thirty-six hours. The amount of oxidation in the system lessens in the same proportions. The pulse becomes lessened in frequency even more than in the physiological condition. The blood pressure, which pyrexia lowers, undergoes a corresponding increase. Moreover, the force of the heart is increased by the influence of the quinine. The investigators thus conclude that the influence of quinine in typhoid fever is purely beneficial.

The conclusions of Dr. Laborde, another French physiologist, are very different. Experimenting on the same animals, he has also observed that quinine produces two different effects. He noticed the same initial increase in the force of the heart's action, but describes the subsequent depression as much more considerable in degree. He observed the heart even to become irregular, and to "tend to drop." If large doses are given from the first, the early stage of increased energy can not be observed and the heart is at once enfeebled. There are symptoms of stupor and collapse, and finally death in consequence of cessation of the heart's action. This physician even goes so far as to regard these facts as the explanation of the occasional sudden death in the cases of typhoid fever treated with quinine. In this disease the muscular tissue of the heart rarely escapes degeneration, and hence a remedy which actually weakens the heart must be given in such an affection with extreme caution. Until the confirmation of the statements of See and Bochefontain, quinine must be regarded as one of those remedies to which this caution applies.

The position that *quinine* holds in the materia medica of the present day, says Dr. Kampf, can be best illustrated by stating that it is considered the medicine that comes nearest to being a panacea for all ills that flesh is heir to. Take up any of the medical journals and you will find *quinine* recommended as an oxytocic on one page, and as an anti-abortion remedy on the next; as a stimulant on one page and as a sedative on the next; as an anti-pyretic on one page and as an exhilarant on the next. One writer says give it to prepare patients for a surgical operation, or for the lying-in period. *Cinchonize* your patients thoroughly, and thus prevent blood-poisoning; and another writer recommends it to be given to prevent such diseases as very seldom happen. I well remember that we used to call the professor of therapeutics in our alma mater "One drachm in six," because he was in the habit of giving a drachm of *sulph. cinchonia* in six powders to all of the dispensary patients, whether they complained of toothache, eczema, fever or general malaria.

Quinine is used in enormous doses, and in every form of disease, all over the world. A dose of twenty grains is a common dose. A dose of sixty grains is often given, and doses of from one hundred to two hundred grains in twelve hours are of frequent occurrence. It is related of a French doctor (Bazire) that he took five ounces of *quinine* in the course of five days. This, of course, proved fatal, though some of his colleagues had the temerity to ascribe his death, not to *quinine*, but because he did not take enough, and thus let the malarial poison get the upper hand. In other words, *quinine* is given internally, externally and eternally. It has taken the place that the lancet and *calomel* held half a century ago. Now it reads, when you visit your patient and find him pretty bad, give him a little *quinine;* if, when you again visit him, he is a little worse, give him more *quinine;* and if, at your third visit, you find the patient dying, pour the *quinine* into him before it gets too late to cinchonize him so thoroughly that he couldn't hear an earthquake were it to occur in the next room.

Undoubtedly *quinine* has its place as a great remedy, just as *calomel* and the lancet are good remedies if used properly and at the right time. But *quinine* should not usurp the place of other and better remedies in the rôle of tonic, oxytocic, antipyretic, sedative, stimulant and antiseptic.

As a stimulant, quinine should not be used, as this action is but temporary, soon to be followed by a depressant or sedative effect.

As a sedative, quinine has to be administered in too large doses to act effectively, and when thus given it is not reliable.

The action of *quinine* as a temperature reducer proves of but temporary benefit, and of permanent injury, by depressing the system in such a manner that the convalescence will be very much prolonged.

An agent of such general value and extensive employment as *quinine*, and one so potent for prompt and decided therapeutical action, is certainly liable to abuse, says Dr. C. A. Bryce, and in careless hands may be productive of great harm. *Quinine* has its toxicological effects as surely as physiological and therapeutic properties, and it is as a toxic agent that I will notice it in this paper. For years I have been convinced that it is too recklessly used by the profession, and my own experience has taught me to be more careful and discreet in its administration. I have so very often seen intense congestion of the nervous centers from overpowering doses of this drug, as well as other remote effects due to its impression upon the central nervous system, that I now consider well the size of the dose I shall administer. I have for a long time gradually given it in smaller and smaller doses, obtaining better results with fewer unpleasant symptoms, just in proportion as I have brought my patient gradually under its physiological and therapeutic influence. If the only ill effects of overdosing with *quinine* were the nausea, tinnitus aurium, frontal headache and temporary depression, I would consider this paper altogether unnecessary. It is, however, the more serious and dangerously injurious consequences to which I would call attention. While *quinine* in general, when properly and judiciously administered, relieves congestion, equalizes the circulation, acts well upon the skin, and, to some extent, combats shock and nervous collapse, such is not by any means the case in every instance, for the reverse condition many times obtains, and *these very symptoms* and conditions are produced and intensified by this same agent.

A few cases from practice will best illustrate some of the pernicious effects of the lavish use of *quinine*. I have times out of mind seen cases of intermittent fever in which the chill had been anticipated and warded off by the timely use of the remedy, but in which the patients for hours would be terribly depressed. They would have the soft, clammy skin, the weak, compressible pulse, the sighing and labored respiration, all of which indicates nervous shock and threatening collapse, and this all due to the profound impression of *quinine* upon the nervous centers.

This is nothing uncommon. All my friends in the profession who have ever given as much as twenty grains of this drug at one dose have seen the same symptoms.

On one occasion I had a lady patient suffering from facial erysipelas. She had a rise of fever for two days, with some very unpleasant cerebral symptoms. On the third day, finding her pulse increasing in frequency and volume, with an increase of temperature, I decided to attempt to check the fever with a commanding dose of *quinine*. Accordingly, I gave fifteen grains of the sulphate at a dose. In three hours she was in a state of collapse, and for a long time it was feared she would not react. *Brandy, ammonia* and *hot whiskey* fomentations vigorously used for several hours finally produced reaction.

Prof. D. B. St. John Roosa, of New York, protests against the indiscriminate use of *sulphate of quinine*, now so common among physicians and fashionable among the laity. Granting its power to reduce hyperpyrexia, he insists that this can not always be done by such means without risk. In cases of commencing nasopharyngeal catarrh, it not only fails, in his experience, to arrest the malady, but it usually aggravates the sufferings of the patient, while in diseases of the ear it becomes positively harmful by increasing the congestion that already exists.

Dr. Doltolini asserts that he treated numberless cases and different forms of intermittent fever, in North Germany, on the sea-coast of Pomerania, and also in South Prussia and Upper Silesia. After this rich experience, he says it is a real abuse to use such large doses of quinine as are given by some, and a protest must be made against it in the interest of patients as well as of physicians. I can not find anywhere in the history of medicine, how and when such large doses came to be given. The only explanation I can offer is, that perhaps some clinical professor, who has not observed many cases of intermittent fever, gave large doses; and the students, who had no judgment about such matters, because they lacked experience, did the same in their practice; and thus it has been handed down to successive generations, *who have learned nothing else but to give large doses of quinine*. One can read any time in the medical journals of the day of such abuse of quinine, so that a new terminology has been formed —*chininamaurose, chinintaubheit* (blindness and deafness from quinine). Formerly we knew nothing of such matters, but now there exists a separate department of medical literature on this subject.

I can remember no case of intermittent fever in which I have not succeeded with small doses (0.06–0.12 gramme), taken regularly every one or two hours till the disappearance of fever, and I have never prescribed larger doses.

That by giving large doses the fever *may* disappear, must be confessed; but *quod fieri potest per minora, non debet fieri per majora;* that

one may kill a fly with a bludgeon, is not to be doubted, but he can do so by simpler means.

If in pneumonia or kindred diseases, large doses of quinine should moderate the fever, the question naturally arises, can not the same result be gained in a more harmless manner, as was done in the last century? I have often observed that doctors have treated patients several years for fever and could not drive it off—not because they did not give small doses, but because they gave them in such an improper way. Quinine was prescribed for a patient; the fever left him; the doctor was contented, and the medicine was discontinued. In six or eight weeks the fever returned, but on further use of quinine it disappeared, and the routine was repeated *ad infinitum*. Thus one can treat a fever a long time without completely driving it out of the system. But if one gives quinine for several weeks, or wine of quinine for a month, after the fever has left, it will not return. Schönbein maintains that "experience has taught that quinia salts relieve the paroxysms quicker; on the other hand quinine cures slower but surer." For this reason quinine wine is recommended for the after treatment.

Dr. Schönbein also proposes in cases of quinine-deafness, the use of antiphlogistic and such other means as are adapted to reduce the swelling in the cavity of the tympanum. I prefer to give up altogether large doses of quinine.

Manquat* (*Lyon Méd.*, October 25th, 1891), gives a summary for the indications for quinine. In *malaria* it is efficacious in all types, besides being a preventive. Laveran showed that malarial microbes disappear from the blood after quinine has been taken for a certain time, and that the addition of a minute quantity of a weak solution to malarial blood destroys them. He considers that the white blood corpuscles are not directly influenced, but enabled more easily to subdue and seize upon the micro-organisms rendered dead or moribund by the drug. If given during or just before the onset of an attack quinine has no power to check it, while this may be prevented if taken at a sufficient interval beforehand. Baccelli made intra-venous injections of one g. during the onset, but during the first six hours could recognize no modification in form, number, or movement of the microbes. As the largest part of a given dose of quinine is eliminated during the sixth hour after ingestion, while according to Laveran it is during the onset that the microbes are present in the blood in greatest number, the drug should be given at an interval of about six hours before an expected attack. Quinine should be taken eight hours before shivering appears in quotidian ague, twelve hours before in tertian, and from eighteen to twenty-four hours beforehand in the quartan variety. To these figures, however, another hour should be added; half an hour on account of the tendency of the onset of successive attacks to be antedated to that extent, and half an hour as allowance for imperfect absorption from impaired gastric action. For the last reason also, and to obviate its rejection, the required quantity should be given in two or three divided doses at half-hour intervals. Two doses, eight or ten hours before the expected onset of shivering, are almost always effectual. If the result be unsatisfactory, an aperient should be given.

Laveran states that no microbes are found in the blood of malarial patients after sulphate of quinine has been taken for eight days in doses of 0.6 to 0.8 g.; but that if after three or four doses it be discontinued, the microbes reappear, and a relapse occurs. Upon this is based his scheme of treatment, namely: During the first three days, 0.8 to 1 g. of hydrochlorate of quinine daily. No quinine during the fourth, fifth, sixth and seventh days. On the eighth, ninth and tenth days 0.6 to 0.8 g. None from the eleventh to the fourteenth day. On the fifteenth and sixteenth days, 0.6 to 0.8 g. None from the seventeenth to the twentieth day. On the twenty-first and twenty-second days, 0.6 to 0.8 g.

* *Brit. Med. Jour.*

BLOODSTAINS AS EVIDENCE IN CRIMINAL CASES.*

BY PROF. CHAS. O. CURTMAN, M. D.

THE detection of bloodstains on linen or other articles of apparel has often a melancholy interest to the medical expert and the criminal jurist. In many cases the decision of court and jury has hinged upon the evidence afforded, or supposed to be afforded, by suspicious stains found upon the clothing or implements used by persons accused of murder. Not very long ago it was imagined by the public, and even by members of the profession and enthusiastic admirers of the microscope, that human blood might be positively and easily identified by the microscope. Upon the extention of the scope of utility of the spectroscope, that instrument has also been held by many to be an unerring detective of blood.

But by degrees the illusion in regard to the positive and unassailable results of the microscope has vanished, and at present (especially since the thorough investigation on the subject by Dr. J. J. Woodward, U. S. A.) no expert would be found bold enough to assert, in the face of contrary evidence, that he can positively identify human blood by any micrometric device. The blood discs of the dog, especially, are so nearly of the size and shape of the human blood that no means, at present known, will discriminate with absolute certainty between the two, even in the fresh state, much less after having been dried and subjected to the methods of pre-

* Read at a meeting of the St. Louis Medico-Chirugical Society.

paration necessary for microscopial investigation. The spectroscope does, with great accuracy, reveal the presence of blood by the absorption bands characteristic of the hemoglobin, but can not make any distinction between the various blood corpuscles affording the coloring matter.

But even were all these difficulties successfully overcome, and could the minutest distinctions be made between the different kinds of blood, such evidence would, in many cases, be rendered absolutely nugatory by the doubts thrown upon the source of the blood and its manner of transfer to the stained article by the following facts:

Having been applied to last winter to make examinations of suspected bloodstains, the thought occurred to me that there is a possibility of the transfer of human blood by means of predatory insects, such as the mosquito, the bedbug and similar others. Experiments showed that the crushing of such an insect, loaded with its meal of human blood, will yield a stain of considerable size, much larger than I had anticipated. I then captured some mosquitoes, after they had imbibed their fill of blood, and kept them alive in close confinement. They were then, after different periods of time, crushed and the blood examined, mixed with various menstrua for dilution. In all cases up to forty-eight hours I found a large proportion of the red corpuscles of human blood still unchanged, and quite readily recognizable. I next examined the blood of the mosquito which had not been permitted to feast on the human subject. The size and color of these corpuscles of mosquito blood are so different from human that no mistake can possibly arise from this source.

In the last few weeks Dr. E. Evers was kind enough to assist me in a considerable number of micrometric determinations of the human blood taken from the mosquito, after various intervals, and the corpuscles of mosquito blood proper. The task has been a laborious one, owing to various difficulties, not the least among which was the selection of a proper menstrum for dilution. Glycerin in various dilution gave excellent definitions of the human blood corpuscle, but left the margins of that of the mosquito so ill-defined as to make accurate measurements very difficult. After various trials we found alcohol of about eighty per cent. the best medium for examining mosquito blood, and very fair for the human blood corpuscle, although both shrink somewhat in the alcohol.

Human blood (after imbibition by the mosquito) averages (red corpuscle), in dilute glycerin, 7.4 micro-millimeters (or $\frac{1}{3500}$ inch); in eighty per cent. alcohol, 6.9 micro-millimeters (or $\frac{1}{3700}$ inch).

Mosquito blood averages in dilute glycerin 1.8 micro-millimeters (or $\frac{1}{14000}$ inch), in eighty per cent. alcohol, 1.4 micro-millimeters (or $\frac{1}{18000}$ inch).

The subject appears to me to be of sufficient importance to deserve further investigation. However much we may regret that another prop is taken from the value of circumstantial evidence derived from suspicious stains in murder cases, it is best to know and make proper allowance for any weak points of such information. For even if stains should now be fully identified as derived from human blood, the accused may plead in his justification that they are due to the agency of insects and can not be allowed to furnish any proof of his guilt.

[Since reading the above paper before the society, investigations with the bedbug (as yet very few in number) appear to show that the imbibed human blood is destroyed far more rapidly in them than in the mosquito. In one individual after twelve hours not a trace of the human blood corpuscle could be detected.]

IS PNEUMONIA COMMUNICABLE?

By H. N. Avery, A. M., M. D., Minneapolis, Minnesota.

I THINK this question may be answered affirmatively, the disease undoubtedly emits a contagious effluvia under certain conditions, and should be classed as a contagious disease.

Its etiology demonstrates that when the vital powers are depressed, the system is more predisposed to the disease. It must be admitted that pneumonia is a general constitutional disease, with local manifestations depending upon a metabolic contagia; then, may not some of the numerous micro-organisms become the exciting cause of the disease?

It is often developed under conditions similar to diphtheria and cerebro-spinal meningitis. Atmospheric conditions are acknowledged factors in its causation.

Mosler, in the London *Lancet*, January 25th, 1891, details a series of acute pneumonias in a family, when there seemed every reason for believing that contagion was the cause of the spread of the disease, he thinks, the father acquired the disease outside, and it was conveyed in turn to the members of his family through the sputa.

Buchmueller, in the *Vereins-Zeitung*, parts 1 and 2, 1891, reports an epidemic of pneumonia, in which he could not exactly point out a contagion from person to person, but was of the opinion that the exciting cause of the disease spread over the place like a kind of miasma.

Williams, in the *British Medical Journal*, January 18th, 1891, is of the opinion that pneumonia is a blood, not a lung disease, and resembles in its course the zymotic diseases.

Gwynne, in the *British Medical Journal*, November 1st, 1891, reports an epidemic of pneumonia, which occurred in Sheffield. In some cases it was possible to trace the attack to distinct infections.

Sokoloff, in the *Gazeta Botkina*, September, 1891, after careful observation on 2,360 cases, concludes there can be no doubt that croupous pneumonia is an infectious disease, which is, in hospitals transmitted from patient to patient, or from neighbor to neighbor, much the same as erysipelas, and recommends that every hospital keep separate wards for patients suffering from pneumonia.

Townsend, in the *Medical Chronicle*, March 27th, 1891, reports a long list of cases occurring in Boston, he says, some may be coincidences, some at least bear out the idea of infectiousness as regards acute lobar pneumonia.

Bozzolo, in *Bulletin*, General Therapeutics of Paris, October 15th, 1889, reports having found the diplococcus in the milk of a patient who was suffering from pneumonia.

Seé and Bordas, in *La Semaine Medical*, Paris, January 1891, made an extensive report of their researches for the pneumo-cocci, in fibrous pneumonia following the grippe. Their researches lead them to consider pneumonia not only as a local malady of infectious origin, but also a disease which may become infectious in the sense that it may invade other organs.

In the *United States Sanitary Memoirs*, Dr. Russell reports: the surgeons on duty with the regiments in the barricks at Bento, Mo., report that men occupying the same bunks with those affected, were very much more liable to be attacked than those more remote. Some of the most intelligent surgeons believed that it was actually contagious. Sufficient has been shown I think to warn us of the necessity of using all proper sanitary measures we can, and adopt a rule, to disinfect thoroughly, and especially to receive the sputa in water or in antiseptic paper or muslin and have it burned.

Changes in Methods of Practice in the Last Forty Years.—The orthodox treatment of malarial or paludal fever, so destructive to the early settlers in the Mississippi Valley, is described as follows in a paper on the above subject by Dr. John Moffett (*Cincinnati Med. Journal*, August, 1891). The picture he gives is sufficient of itself to account for the rapid spread of homœopathy from its first introduction.

The chylopoetic viscera being looked upon as the center of all the woes of the stricken one, dislodgment of the offending "materies morbi" constituted the leading thought in the procedure for relief. As there was a high grade of action in most of these attacks, and the men of that period were stalwart, brawny, lived on plain, coarse food, without much variety associated with simple, primitive habits, impressed the then mind of the profession with the idea of wonderful endurance. Therefore we ought not to be surprised, even now, at the heroism of practice of the period under examination. Consequently all the remedies are to be classed as powerful for the reduction of the strength of the patient in addition to the wasting effects of the diseased processes. Disease at that time was considered an entity—something invading the organs and tissues—that must be expelled before nature could assert her ordinary mien. So, among the first acts was to administer some favorite cathartic.

Perhaps the most common X and X, calomel and jalap, to be repeated at longer or shorter intervals until the bowels were thoroughly evacuated. In the further progress of the case, should the bowels show a disposition to be slow, these purgatives were repeated. The compound cathartic pill was a very common successor for this purpose. Where the vascular action ran high at the very onset of the treatment venesection was the first step in the management. The loss of blood through this channel amounted all the way from ten to sixty ounces, to be repeated the afternoon of the same day—or at farthest the next—if the reaction appeared to be too strong in the discriminating judgment of the medical attendant. So soon as the purgative and the abstraction of blood were carried to their legitimate end, usually followed in the use of a compound powder—of calomel, nit. pot. and antimony—Dover's powder varied somewhat, according to the caprice of the practitioner.

Not unfrequently emetics were employed as an usher in the management or at some future period in the progress of the case. Antimony (tartrate) and ipecacuhana were as often resorted to as any other preparations, antimonial wine perhaps as popular as any other of the antimonies. These were the chief articles of the materia medica internally. Counter-irritation not unfrequently applied when a suspicion existed that the inflammatory process was threatened or already existing. It was not an unusual occurrence for the symptoms to reveal the unpleasant circumstance in the course of four or five days that serious changes had already come to the mucous membrane of the bowels, as shown in the bloody serous stools rapidly exhausting the patient. But it was a long time before it struck the mind of the practitioner that his remedies might have something to do in causing such a condition. So it was, however, at that time, seldom did not the victim fill a green grave. A very common and grievous termination in death—exhaustion the eighth or ninth day from the inception of the attack—brought about so early in consequence of the deadly depletion greatly to be regretted under existing concepts of disease and the effects of medicine. The practice to introduce at any time after the evacuation or the cleaning out of the alimentary canal the antiperiodic treatment could not be entertained until there was a full intermission of the fever. This, of course, never took place in remittent forms engendered from paludal causes.

Again, the articles containing the antiperiodic properties were so crude, it was very seldom an irritable stomach so recently harassed by constant nausea for several days, it may be, although for a time the fever was absent, could retain long enough and the quantity equal to the removal of the cause, and therefore the arrest, of the fever. The concentrated alkaloid of the Peruvian bark had been in use for several years, but had to be administered under restrictions and limitations, as the simple bark given in decoction. Physicians were so fearful of sulphate of quinine in the beginning of its use as a medicine, that they began with the administration of very minute doses. Never while there was any considerable fever. Such was the limitation of medical science less than fifty years ago. If a medical man should now attempt to follow the old landmarks in the treatment of all forms of malarial fevers, the contrast in results would be so palpable that such an one would soon be carefully avoided by the least discriminating.

Andrology.—This name has been applied by the American Association of Genito-Urinary Surgeons, to their specialty of genito-urinary diseases, and a section of andrology has been formed in the congress of American physicians and surgeons. It is the object of the association to place andrology upon a plane with gynecology, ophthalmology and dermatology.

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THE publishers of this journal propose to make it for the interest of every physician not now a subscriber, to become such the present year, and to that end invite correspondence as to the premiums we will offer to all new subscribers!

ELECTRICITY.

WHAT is electricity? said a teacher to his class. I did know, but I have forgotten, answered one of the pupils. That is very unfortunate, said the teacher, for I never heard of any one else who knew. The nearest approximation to an answer is, that it is a form of molecular motion, but that answer leaves us just as much in the dark as before. The spectroscope shows us that the elements of all the uncounted worlds that jewel the dome of night are the same, and that these elements exist separate and distinct and in chemical combinations as during the ages of the process of planetary formation. In that nebulous form of matter thrown off from great solar centers into the immensity of space, or what we denominate space, the gases exist as gases only, the oxygen, the hydrogen and nitrogen as elements having no power to change their properties. There is neither water or atmosphere, for the gases, which form in combination air and water, mingled mechanically before any chemical combination had taken place. The generation of static electricity by friction, gives us a hint of how the mighty force of electricity was generated by the friction of the molecules of the gases as they surrounded the earth and moved with such tremendous speed among themselves, that the frictional contact of their atoms produced the electric spark, when lo, as at the touch of a magic wand, chemical combination among the gases takes place and the result is water and air. The student of chemistry brings about precisely the same results, on a small scale, in the laboratory when he mixes two volumes of pure hydrogen gas and one volume of oxygen and ignites the mixture with an electric spark. The two gases instantly disappear and the chemical combination produced by the electric spark is water, a new substance entirely dissimilar from the gases from which it was born. The molecules of hydrogen and oxygen are rearranged by the electric current and water is the result. May we not, in this truth, obtain a hint of how, in the decomposition of animal matter in the human system, an electric force is evolved which, rearranging the particles which were in a living tissue, form the deadly ptomaines which resemble in action and constituents the most poisonous vegetable alkaloids or the most fragrant perfume.

We know that in all cases where light, heat and chemical action are operative, electricity is also active. Shall we conclude, then, with Prof. Hertz, that light, heat and magnetism are electric phenomena, or otherwise, that light, heat, electricity and magnetism are kindred phenomena, all depending on the motion of the ether, which we think of as invisible and of incalculable tenuity, penetrating all bodies and filling all space. Still the question remains unanswered, What is electricity? We witness its phenomena, we recognize its power, and seek to utilize it as a force in arts, in mechanics and in the various fields of industry, and yet we come back to the words of Jokai: "A thing of which we know a little more than nothing and a little less than something." A little more than nothing, for we know that it is of the nature of light and heat, extending itself, like them, in waves of motion. A little less than something, for of the essence of electricity itself, either static or dynamic, we know absolutely nothing. And yet this force, the essence of which is so much in the dark that no human mind has as yet been able to unlock the mystery, is the great force of the future; of destruction so sudden and terrific as to render war an impossibility; of triumphs in the innumerable fields of industry on the land and water; in the workshop and the field; in the formation and destruction of poison germs, and in strengthening the processes of vegetable and animal life, and

finally in the annihilation of time and space to such an extent as to unite continent to continent and island to island, and make of all the nations of the earth and the whole human family one great brotherhood.

PIPERAZINE.

DR. DISBROW, of Newark, recommends piperazine in cases of pruritis where the skin is dry, the complexion muddy, the urinary excretions filled with urates, showing the system poisoned with the toxic elements due to imperfect nitrogenous elimination. The very marked benefit produced by this drug in urinary calculi and in rheumatism and gouty conditions, and the fact that in a large variety of cases of general itching without any special local irritation, the trouble is undoubtedly due to a poison of the sensitive dermal nerves from the failure of a proper elimination of excretory matter, would indicate that in this new synthetic compound we have an exceedingly valuable remedy.

Dr. T. H. Briter gives, in the "*Wien Med. Blatter*," the results of his experiments with *piperazine* in ten cases, including lithiais, enuresis nocturna, diabetes with urine dyscrasia, calculi renalis urica and uric acid excess, from which he formed the opinion that it was the best uric acid solvent, and of course indicated in all conditions when the trouble was produced by that agent. The remedy was given fifteen grams a day in a mixture composed of the drug with syr. cort aurant, ʒ vi, and aqua, ad ʒ vi.

Drs. Bresenthal and Alba Schmidt, after a series of careful experiments in gouty and tophic affections, found that a one per cent. solution of the drug at the temperature of the blood not only dissolved the inorganic, but also, in part, the organic constituents of the concretions so that they broke down and disappeared almost entirely. The authors find by experiment that a one-half per cent. of the piperazine solution may remain in the bladder for two hours without any discomfort, and suggest that by injecting it into the bladder, stones too large to pass by the urethra may be readily dissolved.

It is evident within the past decade the general advance of therapeutics has been more marked than for a long time previous, and this is owing, in part, to the fact that the new combinations evolved in the laboratory of the chemist are being studied by the physiologist and the pathologist along the line of investigation so clearly indicated by Hahnemann in studying the physiological and pathological action of drugs upon the healthy human organism. Mr. Picker, in his discussion of the science of homœopathy, says: "If the 'orthodox' physician imperfectly perceived and improperly applied the truth within his motto, '*contraria contrariis curantur*,' the homœopathic physician has intellectually erred in adopting the maxim '*similia similibus curantur*' as his formulation to the orthodox world of the truth, which he happily applies rightly. In both schools should be remembered more than hitherto the touch that makes the world akin."

WORK OF THE GREAT CHARITY HOSPITALS OF THE CITY.

THE nineteenth annual report of the New York County Visiting Committee for Bellevue and the other Public Institutions to the State Charity Aid Associations is full of interest, and contains a complete set of reports from all the hospitals under the supervision of the Department of Public Charities and Correction. We find tables coving the work of the hospitals for an entire year, from October 1, 1890, to October 1, 1891, which, by comparison, give us an insight into the work performed in the three leading hospitals of the department. In order to make the comparison more evident, the following table has been prepared for Bellevue, Charity and Ward's Island Hospitals:

	Remaining Oct. 1, 1890.	Admitted from Oct. 1, 1890, to Oct. 1, 1891.	Total Treated.	Transferred to other Institutions.	Total.	Died.	Per cent. of Deaths. 1st Set.	Per cent. of Deaths. 2d Set.
Bellevue.....	572	14,397	14,969	2,387	12,582	1,485	9.92	11.80
Charity.....	767	7,188	7,945	345	7,600	562	7.07	7.39
Hom. Hosp., W. I.	381	4,270	4,651	48	4,603	251	5.40	5.45

It will be noticed that there are two sets of figures for the death rate. The first percentage is taken from the total number of patients treated, and the second is taken from the total number of patients treated minus those who were transferred to other institutions. The reason for this is the fact that these three hospitals have transferred patients who had no possible chance of dying in those institutions in which they were enumerated, and consequently should not be counted in making up the percentage of deaths.

The showing is certainly very favorable for the Ward's Island Hospital, which stands on an equality in its character of patients with Charity; but, as regards Bellevue, it is hard to determine exactly how her death rate would compare, for the number of emergency cases naturally runs up her percentage of deaths. Still, if we allow five per cent. of deaths to Bellevue, which is very

large, considering the fact that she transfers so many bad cases, it would bring the death rate to 6.80 per cent.

There is another thing to consider in reference to these tables, and that is the fact that Bellevue, with 757 beds, has 114 nurses in her wards connected with the training schools and 24 other attendants, or nurses; Charity has 75 nurses; the number of beds is not given, but her accommodations are from 900 to 1,000 patients, while Ward's Island has 29 nurses and 579 beds.

THE LUNACY LAWS.

THE State Committee which have for some time been engaged in preparing reports upon the laws governing different departments of the State, making such changes as will bring them up to the advanced knowledge of the present day, are now engaged upon the lunacy laws and will probably present their report to the Legislature at its present session containing the draft of a general law, which, while it repeals all previous laws upon the subject, which from the constant tinkering and doctoring of the past half century resemble a patchwork of inharmonious colors and materials, will in its simple and harmonious construction deal wisely and justly with the great question of insanity, as it affects the taxpayers and the disordered minds among the rich and the poor requiring the protection of hospitals and the medical care to be had there. While it is to be regretted that legislative action upon the lunacy question had not been delayed until this commission had thoroughly investigated the matter and presented their report, yet the discussion upon the "*State Care Act*" has been so wide and its working so unfair and injurious to the welfare of the curable class for which hospital care is most needed, that the defects of the present law must be apparant to all.

It was for the purpose of presenting to the State Committee on the revision of laws, and to the State a picture of the working of the best institutions in Europe, and a consensus of the opinions of the ablest and most practical workers of those institutions, to be added to those already obtained in our own country, that the Trustees of the Middletown Hospital directed Superintendent Talcott last summer to visit the leading insane hospitals in all the northern countries of Europe, and give a careful study to the lunacy laws and the working of the institutions. We confidently believe that this report, in which the facts are presented with the utmost clearness and discussed with judicial ability and fairness, from which we have made lengthy extracts in this issue of the TIMES, will be of great value to the State Committee in formulating the new lunacy law which will be presented with their report.

ARSENITE OF COPPER.

THOSE who remember the epidemic of cholera in 1849 will recall what an important part arsenic and copper played, not only in the treatment of that disease but in the cholorine or profuse diarrhœa which often prevailed at the same time. Both remedies have been for many years active agents in our repertory in the treatment of diarrhœa, spasms of muscles, chorea and general anæmia. Dr. Auld, of Philadelphia, found that a salt formed by the combination of the two metals, arsenic and copper, of great value in various forms of diarrhœa if given in minute doses and often repeated. Prof. Hare, whose able work on therapeutics has been received with great favor by the profession, strongly recommends the salt not only in diarrhœa but in anæmia, general debility, chorea and other diseases for which the two remedies, given separately, have long been favorites in our school. Under these conditions, says Prof. Hare, the digestion improves, the color becomes more like the normal, and either by a direct effect on nutrition or on digestion or on both, the patient progresses rapidly towards health provided, of course, the anæmia was functional and not organic in its origin. Dr. Hare thinks, in the conditions given, the combination may prove superior to Fowler's solution, if given in doses of from 1-50 to 1-25 of a grain after each meal. In our practice the 1-100 part of a grain is still more effective, especially in diarrhœa.

SURGEON JOHN S. BILLINGS, U. S. A., as the result of an investigation of the health of the survivors of the war, finds that, while field service no doubt benefited many men of weak constitutions, the proportion of sick among veterans now surviving is four times as great as among those of equal age who have not seen service. The illnesses most prevalent among old soldiers are not such as to necessarily involve total disability, but they impair energy and decrease ability to earn. The disproportion between ex-soldiers and civilians is greatest in diarrhœal diseases, where the ratio is 900 to 16, and rheumatism, with a proportion of 1,600 to 320. The bearing of these statistics on the pension question is obvious, especially with respect to infirmities that develop with age.

GENERAL STATISTICS OF THE FIVE MASSACHUSETTS HOSPITALS FOR THE INSANE FOR THE YEAR ENDING SEPTEMBER 30, 1891.

	Admitted.	Total No. Treated	No. Discharged.	Discharged as							Readmitted.	No. Discharged more than once during the Year.	Per cent. of Recoveries to		Per cent. of Deaths to		HABITUAL DRUNKARDS AS FOLLOWS:
				Recovered.	Much Improved.	Improved.	Not Improved.	Not Insane	Died.				No. Discharged.	Total No. Treated.	No. Discharged.	Total No. Treated.	
Worcester.....	549	1,334	509	129	48	55	105	1	51		35	1	26.8	9.6	15.9	6.0	Recovered, 43. [All H. D.'s were discharged as Recovered.
Taunton.....	254	933	253	52	39	45	63	1	53		4	1	20.5	5.5	20.9	5.6	Recovered, 0; Much Improved, 6; Improved, 1; Not Improved, 5.
Northampton..	141	636	133	45	14	33	40	—	31		3	1	34.5	7.0	16.9	4.8	Recovered, 1; Improved, 1; Not Improved, 1.
Danvers.....	366	1,179	302	66	44	60	85	22	85		8	—	18.2	5.6	28.4	7.2	Recovered, 0; Improved, 1; Not Insane, 15.
Westborough.	327	906	412	142	77	54	80	9	57		3	—	34.4	15.6	13.8	6.2	Recovered, 16; Much Improved, 22; Improved, 10.

The moment of leaving the hospital is the uniform time in all hospitals for estimating the mental conditions of patients.

The last column refers only to habitual drunkards. They have been included in the totals of each hospital, but are there entered separately to assist any one in finding the number of the insane by subtracting the number of habitual drunkards from the total; for example, Worcester, total recovered, 129, substracting 43 habitual drunkards leaves 87 insane discharged recovered.

PROGRESS IN THE PRESERVING ART.—From the *Philadelphia Enquirer* we catch a glimpse of the inside working of a large canning and fruit-preserving house. The following imformation was brought out by a shrewd interviewer:

"If it were not for the pumpkin and the tomato, there'd be precious little preserved fruit and berries on sale in this country, for the supply of the genuine article is not only too limited, but the original cost is too great to make it profitable to the preserver. These pumpkins that we just unloaded will be worked up as the basis of a dozen different kinds of preserves—peaches, pears, plums, cherries, apples and all the other fruits, except the pineapple, which we can not counterfeit. The "butters," apple, peach and pear, are made in the same way. Pumpkin enters largely into the composition of all the jellies. Where it is necessary to imitate berries that have a great many seed in them, such as the blackberry and raspberry, we put in tomatoes. By using flavoring extracts and harmless coloring matter we get them up in exact imitation of the goods made from the genuine article. I've been in the business several years, and if you set down before me a dish of country apple butter and a dish of the kind we make, the only way that I could tell the difference would be that ours would taste better. You can't exactly call it adulteration, for nobody was ever poisoned by eating pumpkins, and the doctors say that tomatoes are very healthful."

LICENSES TO PRACTICE MEDICINE IN NEW YORK STATE.—Through the courtesy of Mellville Dewey, Secretary of the State University, we give below, in a compact form, the laws relating to the practice of medicine in this State:

1. The University of the State of New York is the only organization having authority to issue licenses to practice medicine in this State after September 1, 1891.

These licenses must be registered by county clerks on application. (*Laws of New York*, 1890, ch. 507, § 8-9.)

2. Licenses issued before September 1, 1891, can be registered only as follows:

(*a*) A diploma granting the degree M. D. issued before September 1, 1891, by an incorporated medical college *in this State* is a license to practice medicine, and must be registered on application. (*Laws of New York*, 1889, ch. 647, § 2.)

(*b*) A diploma granting the degree M. D. from a medical college *out of the State*, or a license to practice medicine in some foreign country can be registered only if it was indorsed between June 18, 1880, and June 24, 1890, by an incorporated medical college of the State of New York or by the University of the State of New York, or if between June 24, 1890, and September 1, 1891, it was indorsed by the University of the State of New York. (*Laws of New York*, 1880, ch. 513, § 4; 1887, ch. 647, § 2; 1890, ch. 500.)

3. Students who had matriculated in a New York State medical college prior to June 5, 1890, and had not received the degree M. D. prior to September 1, 1891, to be exempt, must have filed a certificate with the University of the State of

New York before August 4, 1891. (*Laws of New York*, 1891, ch. 311.)

Licenses of such candidates may be registered as follows:

(*a*) A diploma granting the degree M. D. from a New York State medical college issued after September 1, 1891, can be registered on presentation of a certificate from the secretary of the University of the State of New York that the applicant had matriculated in some medical college of the State prior to June 5, 1890. (*Laws of New York*, 1891, ch. 311.)

(*b*) A diploma granting the degree M. D. from a medical college not in the State, or license to practice in a foreign country, if indorsed by the University of the State of New York, can be registered on presentation of a certified copy of a certificate filed with the Secretary of the University of the State of New York that the applicant had matriculated in some medical college of the State prior to June 5, 1890. (*Laws of New York*, 1891, ch. 311.)

All diplomas issued by medical colleges in this State prior to January 1, 1880, which are presented for registration after this date should be referred to the University of the State of New York for examination before being registered.

TEUCRIUM SCORDIUM.—Teucrium marum, cat thyme, as proved by Dr. Stapf, of Germany, acting through the cerebro-spinal system, was shown to have a marked effect upon the mucous membrane of the lower bowel, and of especial benefit for ascandes and renal congestion attended with intense itching. At a much later day Dr. André Sobel, of Paris, published a monograph on hemorrhoids, for which, in the early stages, he recommended, as almost a sovereign remedy, another variety of teucrium, the teucrium scordium or water germacide. In those hemorrhoidal cases in which the tumors were small, but in which marked pain, irritation and pruritus existed, the remedy given in powder or pill made from the extract with, perhaps, an external application of an ointment, the remedy acted almost as a specific. The remedy may be given in tincture or powder of the leaf; it has the taste of pepper, warms and stimulates the stomach and increases the appetite, especially if given a short time before meals. We have used the teucrium marum and scordium in the form of spray and snuff in the sneezing and watery discharge from the nose in influenza, and have found it of benefit in vaginal leucorrhœa. In our experience the drug should be used in appreciable doses to produce any marked effect.

APPENDICITIS.—Dr. Lunk, in the *N. Y. Med. Journal*, denounces in the strongest terms the old-fashioned use of opium and poultices in the above disease, and recommends first the free use of saline cathartics until the gut is thoroughly emptied and the bacteria cleared away by free watery discharges. Advise perfect rest in bed. Forbid any but liquid nourishment. If pain is severe apply counter-irritation and dry heat locally till the salines act. If the patient improves wait. If the pulse grows worse, if pain increases, if the temperature rises, if tumefaction become larger, if tenderness becomes more marked, *operate*. At no time give morphine, but consider an increase of pain sufficient to demand relief by opium an imperative, unequivocal and emphatic indication for surgical interference.

DR. N. EMMONS PAINE has resigned the position of Superintendent of the Westborough Insane Hospital, one of the great insane hospitals of Massachusetts, with which he has been connected since its organization, to take charge of a private institution, of which he will be the proprietor, in West Newton, one of the beautiful suburban towns of Boston, located about eight miles from that city. Dr. Paine, though a young man, has won a high position among the alienists of the country for his thorough devotion to his work and that keen, logical and almost intuitive character of mind, so all comprehending in a physician, which leads to the most accurate results in diagnosis and treatment. In the new work upon which Dr. Paine enters he will be enabled by selecting those, from the large number who will apply, best suited for medical treatment, to accomplish better results than ever before.

THE State Board of Examiners, at their meeting in Albany, January 15th, elected Dr. Couch, of Fredonia, as president and Dr. W. I. Lewi, of Albany, as secretary. The secretary reports that the conference was entirely harmonious. The questions discussed were those of detail arising since the State medical law went into operation September 1, 1891. Seventeen of the twenty-one members from the three organized schools were present, and also Secretary Dewey and Prof. Thomas, of the regents.

A COMPARISON of the census reports of 1880 and 1890 of the causes of death in the United States shows: in 1880 the deaths from consumption are set down as 84,217, while in 1890 they are 102,199. An increase of 18,000 deaths in ten years,

being very much in excess of the increase of population. New York shows over twice the number of deaths from consumption in 1890 than in 1880. Thus the discovery and the classification of the tubercular bacilli seems to have possessed no effect thus far in preventing the disease.

THE CLIMATE OF BERMUDA.—Dr. Mathews, in the *N. Y. Medical Journal*, speaking of the climate of Bermuda says, that owing to great dampness patients with phthisis, except in the very early stage, do not do well there, while he considers the climate peculiarly adapted to cases of bronchitis and asthma. Rheumatism, gout and neuralgia are not benefited but the quiet, the pure air, the even temperature and the life in Bermuda make a visit there of peculiar benefit to the convalescents, hypochondriacs, overworked scholars and business men and those suffering from neurasthenia and mental depression.

PTYALISM FROM COLCHICUM.—Dr. Shand, of Edinburgh, Scotland, mentions several cases of ptyalism produced by the use of colchicum, commencing with one minim doses and going on till some physiological effect was produced. We have never seen a case of ptyalism produced by large doses of colchicum as certain physiological effects were produced at too early a period, such as nausea, diarrhœa, the establishment of which often terminating the attack. In cases of rheumatism and gout, especially attended with dropsy, small doses of the drug, frequently repeated, will, when indicated, generally produce relief before any unpleasant physiological action is produced.

ACTÆA RACEMOSA.—The tincture of actæa racemosa has long been a favorite remedy, and has been carefully proved in certain well indicated rheumatic conditions, more especially in the hands and wrists. The *British and Colonial Druggist* suggests its administration, combined with small doses of iodide of potassium, instead of alone, as has been the custom in the New School. The combination is readily absorbed into the blood, depressing both the force and frequency of the pulse.

IT IS reported at the barge office in this city that from seventy-five to eighty per cent. of the Russian Hebrews arriving in such large numbers have either a double or single rupture. This is, undoubtedly, in part owing to the character of the labor in which they have been employed and the lack of proper nutrition.

DR. T. M. STRONG, for several years chief of Staff of the Ward's Island Hospital and more recently located in Macon, Ga., has accepted the position of Resident Physician of the Massachusetts Homœopathic Hospital. The hospital numbers now, that its new addition is completed, 250 beds, of which twenty are free; wards containing sixteen beds and rooms with from one to four beds will enable the hospital to classify the patients to the best advantage. Great care has been taken with the ventilation and plumbing of the building, and we shall expect to hear of excellent results under the new superintendent.

TARPON SPRINGS.—We call the special attention of our medical friends to this new home for the invalid and those seeking rest and strength during the winter months, as a place selected by several eminent physicians as possessing greater advantages for a winter home than any other in Florida. Tarpon Springs is situated on a bayou two miles from the Gulf of Mexico, in the midst of orange groves, and circled round on every side by vast pine forests. The atmosphere is dry and the latitude about that of Cairo, in Egypt. A large hotel, Tarpon Springs Hotel, with several cottages furnish all the modern comforts of a well-appointed home. Cars leaving Philadelphia at 7.20 A. M. reach Tarpon Springs at 8.30 P. M. the next night.

TWENTY-FIRST ANNUAL REPORT OF THE MIDDLETOWN STATE HOMŒOPATHIC HOSPITAL.

The trustees, in their annual report, bring out in strong relief the injustice of the existing lunacy laws in regard to this hospital. It will be remembered this hospital was established, partly by private donations, as a homœopathic institution, the only one in the State to which those believing in the doctrines of that school might send their friends for treatment, not alone from a district bounded by a few counties, but from all the counties in the State. By the action of the new law dividing the State into districts, the wards of the Middletown Hospital are filled with the paupers of the counties marked out as its district, to the exclusion of the very class throughout the State for which the hospital was established. It is hoped the committee now revising the lunacy laws of the State will take this matter into serious consideration. The superintendent in his report brings out some strong points, which he commends to the committee on the revision of the lunacy laws. In this nineteenth century the State of New York can not afford to violate any of its obligations or to be unjust to any of its citizens. We quote from the superintendent's report:

"The broad and beneficent principle of 'State care for the insane' can never be righteously exemplified until, through the wisdom and generosity of the people, provision is made in our State hospitals and their appendages (namely, cottages, attached dormitories, country homes, and purchased and refitted and utilized county asylums) for the admission, for cure and care, of every insane person in the State, from the lowest to the highest degree.

"Like the Scotch lunacy law, which provides for 'the care and treatment of lunatics in Scotland,' the law of our own State should be headed: 'An act to provide for the Cure and Care of the Insane in the Commonwealth of New York.' The general act should be all-embracing: subsections should provide for the different classes of poor or rich, voluntary or involuntary patients, or those for whom a special variety of treatment is desired.

"But if all insane persons can not immediately become wards of the State, or the recipients of her care, then the question arises: What selections shall be made, and to whom shall special favors be granted? We answer without hesitation or mental reservation of any kind whatsoever: *The acute insane*, who have the largest chance of recovery, if properly and speedily treated, should, first of all, be admitted to the wards of our State hospitals. This right of State hospital treatment for the acute insane should be freely accorded to both private and public patients; especially should the poor but self-supporting private cases be received without first subjecting them to the depletions of avaricious enterprise, and without filling their souls with the nightmare prospect of pauperism. It is bad enough to be insane and in straitened circumstances, without being forced into a condition of pauperism while on the way, nor obliged to endure the stigma of pauperism after arriving at a State hospital for treatment.

"The State should make provision for the insane as follows:

"(1.) The acute insane of the pauper class.

"(2.) Private patients who can pay but small rates of board.

"(3.) Those who can pay ample rates, but who desire care in a public hospital rather than a private asylum.

"(4.) All classes of the chronic insane.

"(5.) Provision should be made for those who prefer a specified form of medical treatment.

"(6.) The State should care for and protect the defective classes, such as idiots, imbeciles and the weak-minded generally. These should be kept in educational institutions or training schools.

"(7.) Society should be guarded by the continued seclusion, on the part of the State, of all the criminal insane.

"(8.) Special hospitals should be provided for the epileptic insane, because they need special care, and therefore buildings and furniture should be provided for them in accordance with the necessities of their disease.

"Each class of the insane should be furnished with such care and treatment and surroundings as shall most surely attend to the recovery of the curable, or the improvement of the feeble, or the betterment of the criminal and epileptic insane, or the comfort and happiness of those who can never recover.

"But while we advocate a just and generous method of caring for the insane in this State, we should deprecate all unnecessary extravagance, or ruthless destruction of properties already acquired. A wise discrimination should be exercised in settling the question as to whether or not a given institution shall be abandoned or continued. To this end all county asylums, which are suitable for the housing of the insane, or which can be made so by moderate expenditure, should, as we said in last year's report, be purchased and utilized. The principle of 'State care for the insane' (which, if properly applied and rightly interpreted, is simply a synonym for wise and good care), may be demonstrated in a large number of moderate-sized institutions, as well as in a few large and possibly overgrown hospitals, and perhaps it may be better exemplified in the former than in the latter. State care implies State supervision by competent commissioners in lunacy, disinterested oversight and direction of affairs by impartial boards of trustees, skilled medical attendants, intelligent nursing, good food and clothing, comfortable quarters, and cheerful æsthetic and stimulating surroundings. If these may all be afforded in rehabilitated county asylums (which may be converted into annexes of our State hospitals), why should they be allowed to fall into the decay of disuse? No waste of this kind should be permitted by our State legislature.

"In Scotland, the royal asylums, which are chartered public institutions, receive both rich and poor; but especially do they provide for the insane who can pay but moderate prices. District and parochial asylums provide for those of the poor insane of the acute class who can not be accommodated in the royal asylums. The lunatic wards of poor-houses are the homes of some of the chronic pauper insane, while the cottages of the peasants give shelter to others of the harmless and chronic insane, both pauper and private. Thus all classes are provided for, and no applicant for care and protection in a public hospital is refused. In addition to the above, they have training schools for imbeciles, and strong asylums for the criminal insane. New York has no royal asylums for the accommodation of private patients; hence the proper course is to provide in her State hospitals for all, both poor and rich, acute and chronic; and in doing this it may be wise not only to use those county asylums which are worthy of continuance, but also to establish a system of country homes as appendages of the various State institutions. It will ere long become an imperative necessity to relieve the wards of our State hospitals of their accumulated burden of chronicity, and a plan for such relief should be very speedily devised and promptly put into operation. To this end, and for the still broader purpose of affording additional means for the cure and the comfort of our patients, we have deemed it our duty to suggest the establishment of country homes for some of our cases.

"In the establishment of sub-retreats for the insane, we should seek to grasp every means for the improvement of our patients which may be found in change of scene, in variety of surrounding, and in variation of atmospheric pressures. The Middletown hospital is located about 700 feet above the level of the sea. Patients brought to us from New York, Brooklyn, Long Island and Staten Island seem to be benefited very materially by breathing the invigorating air of this moderate altitude. The benefits thus derived have often been noticed and noted. Now it seems to me that we might broaden the experiment of air changes by establishing in Suffolk County and upon the seashore an inexpensive home for patients, where the heretofore residents of the hilltops might gain great physical and mental advantages by a temporary residence by the seaside. Again, we might build another home in Ulster County upon the banks of one of the lakes which may there be found, about 1,400 feet above the sea level; and again, we might found still another home at Liberty, Sullivan County, at a point which is 2,000 feet above sea level. Thus we might have health resorts for our patients as follows:

"(1.) Suffolk County at sea level.

"(2.) Middletown, Orange County, 700 feet above sea level.

"(3.) Ulster County, Lake Mohonk, 1,400 feet above sea level.

"(4.) Sullivan County, Liberty, 2,000 feet above sea level.

"By establishing such a series of homes in this hospital district, we would be able to give our patients every advantage of scenery and atmospheric influence that can possibly be attained.

"The advantages of this course would be:

"(1.) The utilization of all possible climatic and atmospheric influences in behalf of the insane, and these may be applied with restorative effect, we believe, in some cases which do not under present treatment recover. Changes of air and scene and climate are used with good results in many forms of chronic diseases; why then may

not the insane be benefited by the proposed measure; and why should the insane be compelled to endure the monotony of one locality, during a long period of years, even if that locality is a healthful one, and the victims of disease are confined in a thoroughly equipped State hospital?

"(2.) Economy and safety may be promoted by the adoption of such a plan. Farm lands may be bought much more cheaply in the counties named than in Middletown. One-story buildings can be erected where there is plenty of room for them, and thus the dangers of fire may be largely averted. It would certainly be much easier to remove patients from a one-story building than from a structure four stories high. No costly fire apparatus would be required in one-story buildings. Houses of wood, built upon the slow combustion plan, with walls filled in with non-combustible mineral wool, would be safe, satisfactory and economical.

"(3.) The distribution and separation of insane patients would thus be accomplished, and the evil effects of herding and overcrowding in large conglomerate structures would be avoided. Classification of the insane could by the proposed plan be made thoroughly systematic, and each individual in the congregated mass could be placed where he would derive the greatest benefit and happiness without imposing injury upon others.

"(4.) The interest of the people in the sick would be stimulated by the presence of a home for invalids in nearly every county of the district, and if the State would erect these necessary structures in the localities suggested, the various counties would feel compensated for the loss of those county asylums which might not be deemed worthy of continuance.

"(5.) Such a plan, if carried into effect, would prove beneficial to the health and usefulness of assistant physicians, who would thus, while detailed to take charge of patients at these various homes, enjoy relief from the monotony of hospital life, and reap, with their patients, the usual benefits of a change of air.

"(6.) By means of these small adjuncts of the general hospital, an opportunity would be afforded to train young assistant physicians for the responsible duties of a general medical superintendent. Experience in the management of a country home for the insane would ripen a young physician, and give him that knowledge and that self-reliance which are essential for the wider and more responsible duties of physician-in-chief to a State hospital.

"(7.) Patients thus disposed of would not only gain benefit from a stimulating or soothing atmosphere, but they would enjoy larger and more agreeable facilities for healthful out-door employment than they would be likely to obtain in the routine work of a large State institution. Out-door employment is much to be desired for those in the pursuit of health—that is, for those who are physically strong enough to engage in it.

"All the State hospitals might adopt a plan similar to the one outlined for the institution at Middletown. For instance, the State hospital at Poughkeepsie might establish a branch retreat on Staten Island and another in the Adirondacks; the Utica State Hospital might send patients to the North Woods or to the banks of Oneida Lake; the Buffalo State Hospital might patronize the northern spurs of the Alleghanies; Willard and Binghamton might exchange courtesies of lake and upland; while the State hospital at Ogdensburg might monopolize for its patients the salubrious air of the Western Adirondacks, or, through reciprocity, gain access to the health-giving breezes of Halifax.

"It is an unfortunate fact that our State hospitals are at the present time overcrowded. This condition brings:

"(1.) Hardships of a dangerous nature to those who are already inmates of these institutions.

"(2.) It prevents the transfer of patients who are now in county asylums to State hospitals.

"(3.) It obliges the authorities of these overcrowded hospitals to refuse admission to those of the self-supporting classes who, while suffering with acute insanity, send up a Macedonian cry to the State for help.

"Such a condition of affairs involves compulsory patronage of private asylums by all who are able to pay the rates demanded in such institutions. While those confined in overcrowded wards may be subjected to some unsanitary conditions which impair rather than restore health, and while delays in transferring patients from county to State hospitals may seem unfortunate to some, it seems to me that the most pitiable of all plights is that of the insane person who is turned away from the doors of a State hospital, whither his anxious and distressed friends had brought him, simply because he has money enough to make him an object of eager attention by those who are willing to profit by his helpless condition. Such a condition of affairs should never have existed in the imperial commonwealth of New York; and yet the apparent necessities of the case are such that by an overwhelming vote of the authorities of our State hospitals, and by a solemn decree of the highest State authority, all who can possibly pay more than ten dollars per week for their board and care are compelled, for the present, to patronize private asylums. I have searched diligently throughout the realm of monarchical governments in continental Europe for a similar example of compulsory patronage of private asylums, and failed to find it. While private asylums are tolerated in kingdoms of the East, they are not favored by public officials nor by private citizens, as a rule; but, as a source of relief from the exactions of private enterprise, provision is made in State or general public hospitals, and in many of the city hospitals, whereby those who can pay their way are admitted and cared for in accordance with the most equitable of terms—that is, they pay for what they get, and they get what they pay for.

"Now, there are several ways in which more room may be speedily secured, and by them the dangers of overcrowding may be obviated, and accommodations for all applicants for State care may be provided. The means suggested are as follows:

"(1.) By enlarging our State hospitals.

"(2.) By purchasing and fitting up in a suitable manner county asylum buildings already erected, and these might henceforth be designated as annexes of State hospitals.

"(3.) By building branch establishments of our State hospitals in localities likely to promote the highest healthfulness of all classes of the insane.

"(4.) By establishing a system of placing quiet and harmless insane patients in private homes.

"Increased accommodations at the State hospitals are being prepared, but it will be nearly a year, in all probability, before these new buildings, already under way, can be completed, furnished and occupied. County asylum buildings could be purchased and fitted up in much less time; country homes would require a longer period to make them available, as sites would have to be selected, farms purchased and appropriations for new buildings made by the Legislature.

"As a future possibility, we believe that harmless and quiet cases may be placed in the private homes of farmers and artisans; and the wards of our State hospitals thus be relieved of overcrowding. This plan of disposing of quiet and harmless dements, which form a considerable bulk of the accumulations of every hospital, finds increasing favor with the commissioners in lunacy for Scotland, after an elaborate and careful experiment of more than thirty years. It is also approved, as far as I could learn, by the medical officers of the various public asylums in that country.

"But by far the most feasible plan for a speedy relief from overcrowding is the purchase and utilization of all

the good county asylum buildings. These could probably be bought and fitted up at a cost not exceeding $550.00 per capita, and yet they would answer every reasonable purpose."

This most important subject is so ably discussed by Superintendent Talcott that we feel no apology is due to our readers for the lengthy excerpt we have made from his report.

BIBLIOGRAPHICAL.

THE PHARMACOLOGY OF THE NEWER MATERIA MEDICA. Embracing the Botany, Chemistry, Pharmacy and Therapeutics of New Remedies. Being the Results of the Collective Investigation of New Remedies, under the "Working Bulletin" System, Properly Arranged, Classified, Indexed and Placed at the Disposal of the Medical Profession. Pp. 1,808, octavo. Subscription price, $3. George S. Davis, Detroit, Mich.

In fascicle 15 the publisher has presented the last part of the Pharmacology of the Newer Materia Medica. Included in this part are the indexes to the whole volume, making it, when bound, complete.

The publisher expresses regret that he has not been able to finish the volume by the date set in his first prospectus, but the delay is more than compensated by the increased size of the book. A promise of 800 pages is fulfilled with over 1,300 pages!

The scope and value of the work can best be judged by reference to the four indexes covered by pages 1265 to 1307 inclusive, and comprising Index of Citations, Botanical Index, Index of Active Principles and Therapeutic Index.

It should not be supposed, says the publisher, that the publication of this book marks the end of the investigation of new remedies. On the contrary, such investigation will be continued, and such additional information as may from time to time be gathered, afforded to the medical profession in supplementary form.

Any one acquainted with the expense of producing a work of this character will readily agree that this publication at the price required can not be regarded as a commercial enterprise. The vast amount of money expended by the house prominently engaged in the collective investigation of new drugs, in several botanical expeditions to remote parts in collecting, curing and preparing the drug, and placing it before the investigators of the world, etc., may be left out of consideration altogether, and then the receipts are not expected to meet the actual cost of the mechanical work of printing, not including the work of compilation and indexing.

The labor, therefore, has been one of love, not only on the part of those who have borne this expense, but quite as much on the part of the many investigators who have spent their time and energies in the furtherance of medical progress and therapeutic advancement.

To all such colaborers, and all who have encouraged the work, in whatever way, the publisher feels especially grateful, and he expresses the hope that each may enjoy that peculiarly satisfactory reward of unselfish effort which comes to every one engaged in any work of human benefaction.

To be appreciated the work should be examined, and it will be found to consist largely of clinical reports of characteristic cases, so concisely stated as to be of service in prescribing. As stated in the title, the majority of the subjects treated are of the newer drugs, and the text will be found both interesting and instructive for study. The price charged for the book is only about one-third the usual cost of such works. No mistake can be made by our readers in adding this book to their libraries.

THE GUIDING SYMPTOMS OF OUR MATERIA MEDICA. By C. Hering, M. D. Vol. X. Philadelphia: Published by the Estate of Constantine Hering, 112 and 114 North Twelfth street.

We had no idea when we reviewed Volume IX of this work that the tenth and final volume was so nearly ready for issue.

Mrs. Hering, the widow of the author, upon whom the trust devolved, says in a preface to this volume, that "at last the tenth and final volume is completed, and the promise made to Dr. Hering shortly before his death, that the literary executors would finish the colossal work, is fulfilled."

Due credit is awarded to Drs. Raue, Knerr and Mohr for their editorial labors in behalf of the work, covering a period of nearly a dozen years, and to Walter E. Hering for furnishing the means for the mechanical part of his father's *chef-d'œuvre*.

It now rests with the profession, for whose weal the genius and fifty years' labor of Dr. Constantine Hering were ungrudgingly given, to show their appreciation of these gigantic efforts by purchasing the books, thereby benefiting themselves and helping to make happy the declining years of a most estimable woman, and one who was a true "help-meet" of the late Dr. Hering.

The price of this work is $5 for each of its ten volumes, bound in cloth, and any one who will send us a subscription shall have the TIMES one year *free!* We take this practical method of showing our kindly appreciation of the life-work of this distinguished author and of his worthy family, for several reasons, and one is to show that the TIMES has no antagonism to the principles which it represents. Send us your subscriptions!

It may be of interest to our readers to add that a "Repertory" is being rapidly prepared, which will be not only a complete clinical repertory, but an accurate index to this work. The "Repertory" will be made as brief as possible, not to exceed $10.00 in expense, and will include the good points of the index prepared by Dr. Cigliano, of Naples, now unquestionably the most practical "Repertory" on the market, to those who read Italian.

INTERNATIONAL JOURNAL OF SURGERY. Vol. V. 1892.

While we are warranted in regarding the success of the "International Journal of Surgery" as an approval by the profession not only of the principles upon which its publication was founded, but also of the manner in which those principles have been carried into practical operation, it has not yet fully attained the high ideal entertained by its projectors. With this ideal still in view, the volume for 1892 will be marked by such further improvement as the experience of the past four years may suggest. The Editorial Department will continue in charge of the gentlemen who have conducted it with so careful an appreciation of the demands of the progressive practitioner, and such features will be added to this already comprehensive department as shall maintain this Journal in the position which is universally accorded it, of the foremost surgical publication of the world.

The business department will be in charge of the gentlemen by whom it has hitherto been conducted with the exception of Dr. Ferdinand King, whose connection with the Journal Company ceased on January 1st.

DISEASES OF THE BLADDER AND PROSTATE. By Hal C. Wyman, M. D. The Physician's Leisure Library Series. Geo. F. Davis, Publisher, Detroit, 1892.

The author has succeeded admirably in presenting in a small space, but with marked clearness, the best ideas of specialists upon the serious troubles of the bladder and prostate.

A B C OF THE SWEDISH SYSTEM OF EDUCATIONAL GYMNASTICS. By Hartvig Nissen, Instructor of Physical Training in the Public Schools of Boston, Mass. Instructor of Swedish and German Gymnastics at Harvard University's Summer School, 1891. Author of "A Manual on Swedish Movement and Massage Treatment," etc. A Practical Hand-Book for School Teachers and the Home. Price, 75 cents, net. F. A. Davis, publisher, Philadelphia.

This excellent little work is a practical hand-book for teaching the "Swedish Educational Gymnastics." It is true there are some treatises on this subject, but they are not sufficiently practical to be of use as a hand-book. The author of this work has avoided the use of difficult scientific terms, and made it as popular and plain as possible.

The first two chapters contain questions and answers such as have been most frequently put to the author in his nearly fourteen years' experience as a teacher of gymnastics, and these two chapters will give a very satisfactory idea of the foundation of the "Swedish System of Gymnastics."

The fullest instructions and commands are given for each exercise, and seventy-seven excellent engravings illustrate them and add greatly to the practical value of the book.

MASSAGE AND THE ORIGINAL SWEDISH MOVEMENTS. Their Application to Various Diseases of the Body. Lectures Before the Training Schools for Nurses Connected with the Hospital of the University of Pennsylvania, German Hospital, Woman's Hospital, Philadelphia Lying-In Charity Hospital and the Kensington Hospital for Women of Philadelphia. By Karre W. Ostrom, from the Royal University of Upala, Sweden; Instructor in Massage and Swedish Movements in the Philadelphia Polyclinic and College for Graduates in Medicine. Second Edition. Enlarged, with Eighty-seven Illustrations. Philadelphia: P. Blakiston, Son & Co., 1891; pp. 143, 12mo.

PHYSICAL DIAGNOSIS. A Guide to Methods of Clinical Investigation. By G. A. Gibson, M. D. and William Russel, M. D. With One Hundred and One Illustrations. New York: D. Appleton & Co., 1892.

In a 12mo. volume of 375 pages, the authors have given the results of several years experience in teaching methods of clinical investigation, having limited themselves to physical examinations. The authors' methods are excellent and a careful study of them will materially aid in a correct physical examination.

BOTANY. A Concise Manual for Students of Medicine and Science. By Alex Johnstone, F. G. S. With One Hundred and Sixty-four Illustrations and a Series of Floral Diagrams. New York: D. Appleton & Co., 1892.

The author, in his 12mo. volume of 260 pages, has prepared a very excellent note-book and illustrated digest which will enable the student to quickly arrange and make the most effective use of the various facts and theories treated by the teacher.

Announcement. E. B. Treat, publisher, N. Y., has in press for early publication the 1892 "International Medical Annual," being the tenth yearly issue of this deservedly popular work.

Its corps of thirty-five editors are specialists in their respective departments, and have been carefully selected from the brightest and best American, English and French authors.

It is the embodiment of what is worth preserving of the current medical journals of the world for the year, and will contain over 6,000 references to diseases and their remedies.

The service rendered the profession by this Annual can not be overestimated, and it is an absolute necessity to every physician who would keep abreast with the continuous progress of practical medical knowledge.

This Index of New Remedies and Dictionary of New Treatment, epitomized in one ready reference volume at the low price of $2.75, make it a desirable investment for the busy practitioner, student and chemist.

OBITUARY.

DR. CHARLES A. BACON.

Dr. Charles A. Bacon, formerly of this city, died January 9, 1892, in Deland, Fla., at the age of fifty-five. His death was produced by pericarditis brought on by a prolonged immersion in the Indian River a year ago. Dr. Bacon was born and brought up in this city. He was graduated from Columbia College, studied medicine with Dr. John F. Gray, of this city, and completed his medical training with a three-years' course of study in Vienna and Berlin. He practiced twenty-three years in this city, was an active promoter in the organization of the Ward's Island Hospital, and a member of the Medical Board for many years.

He moved to Washington, D. C., six or seven years since, continuing there the practice of medicine till two years ago. Five years since he invested in real estate in Florida, and purchased two or three orange groves, which he cultivated. He spent his winters only in Florida, going there first a year ago, and the last time in October. He enlisted as assistant-surgeon in the army at the time of the battle of White Oaks. Mrs. Bacon, who died in 1890, was a daughter of President Reed, of the University of Missouri. Two children survive him, a girl of fourteen and a boy ten years old.

DR. J. W. DOWLING died at Dr. Seward's Sanitarium, Goshen, N. Y., of paralysis, January 14th, in the fifty-fifth year of his age. Dr. Dowling graduated at the Hahnemann Medical College in 1857, and shortly after entered upon the practice of his profession in this city, which was his home, till his death. Genial and courteous in his manner, kind and sympathetic, honorable in his dealings with all, Dr. Dowling was highly esteemed alike in the sick-room, among his professional brethren, in the lecture-room, and in social life. In 1871 Dr. Dowling was appointed Prof. of Theory and Practice of Medicine in the N. Y. Homœopathic Medical College and later Prof. of Physical Diagnosis, which chair he held at the time of his death. Dr. Dowling served very acceptably on the staff of the Hahnemann Hospital, the Ward's Island Hospital and at different times was president of the county, state and national societies of the school to which he belonged.

DR. HENRY INGERSOLL BOWDITCH, the eminent physician, died in Boston, January 14th, at the age of eighty-four. He graduated at Harvard in 1828 and took his medical degree there in 1833, where he was subsequently Professor of Clinical Medicine. He was a most active man in his chosen profession, as well as a most worthy and helpful citizen. He was a voluminous writer of current literature in his time, a progressive thinker, and he first suggested the idea that soil moisture is a potent cause of consumption in New England. Liberal and progressive medicine loses a firm supporter in the death of this venerable man.

DR. S. POWELL BURDICK, formerly of New York and for many years Professor of Obstetrics in the New York Homœopathic Medical College, died at his residence in Oakland, Cal., December 19, after a short illness.

TRANSLATIONS, GLEANINGS, ETC.

RETROSPECTIVE THERAPEUTICS.

BY ALFRED K. HILLS.

The Hypodermic Injection of Oxygen.—Dr. Francesco Valenzuela, physician to the provincial hospital, Madrid, has just published in *El Siglo Médico* a paper on new methods of administering oxygen, with especial reference to the treatment of senile pneumonia (*Lancet*). Believing that oxygen inhaled in dyspnœa fails frequently to relieve because it does not come in contact with a sufficiently large vascular surface, he began administering the gas per rectum and also hypodermically. In every case in which the oxygen enema was given the dyspnœa was relieved in a decided and permanent manner. The ease and rapidity with which the gas was absorbed by the intestine were very remarkable. Oxygen, indeed, appeared to be as rapidly taken up by the intestine as by the lungs, four injections of five liters each being absorbed in an hour, thus proving the intestinal mucous membrane to be capable of serving as a most valuable adjunct to that of the lungs. In employing oxygen hypodermically Dr. Valenzuela believes it to be important to introduce the gas in its nascent state. The situation selected for the puncture was the arm, and the quantity of gas introduced varied from half a liter to a liter. Cellular emphysema was of course produced, and a sensation of heat was complained of, but both disappeared entirely in the course of a few hours. There was no calmative action or slowing of the respiration, but there was a marked stimulating action on the heart, such as is indicated in the collapse that follows pneumonia or fevers of a typhoid character, also in cerebral congestion and asphyxia. No indication is given of the temperature at which the oxygen is introduced, a point which, according to Dr. B. W. Richardson, is of great importance. Perhaps the Spanish observer, who does not appear to be aware of Dr. Richardson's work, is mistaken in ascribing the advantage gained by using oxygen prepared *ad hoc* to its being nascent, whereas it is probably due to the temperature being high. It will be noted that Dr. Valenzuela confirms Dr. Richardson's statement that oxygen is relaxant and eliminative.

Amyl-Nitrite for After-Pains (G. W. Winterburn, M. D., *Jour. of Obstetrics*).—I am satisfied that in many cases a nice warm meal is better than any medicine. Still, I have had several cases in which the pains were exhaustingly severe, and in which I was glad to turn to nitrite of amyl. This potent drug is a very efficient controller of after-pains, and, used cautiously, I see no reason to apprehend harm from it. A neat way of using it is to saturate a small piece of tissue paper with five or six drops, stuff this into a two-drachm vial, and request the patient to draw the cork and inhale the odor when she feels the pain coming on. It acts with magical celerity.

Turpentine in Post Partum Hemorrhage.—This, says the *Pacific Medical Journal*, is a prompt and efficient remedy. A piece of lint saturated with turpentine should be carried directly into the uterus, so as to bring it in contact with the inner surface. In one or two cases, where the patient was almost pulseless, it seemed to act as a stimulant; but on no occasion did it fail to instantly check hemorrhage and produce contraction.

Antiseptic Injections in the Treatment of Phthisis.—The London *Lancet* gives pretty fully the treatment of phthisis as practiced by Dr. J. Roussel, of Paris, since 1883. It is the hypodermic injection of antiseptic substances, preferably eucalyptol and thymol.

Dr. Roussel employs pure sterilized olive oil, as this is a substance not foreign to the usual nutrition of the human body. It is easily saponified and assimilated by the organism. This is effected as readily by the capillaries of the skin as by the digestive tube. The volatile essence contained (in the proportion of twenty per cent.) by sterilized olive oil travels with the blood till it reaches the lungs, and there, being placed in contact with the air the patient breathes, becomes diluted in the lungs, evaporates and escapes with the breath. Thus the patient's breath smells of eucalyptol very shortly after the injection, and subsequently both the sweat and the urine have the same odor. When thymol is used the odor is very pleasant, and several patients have been surprised and pleased to find how sweetly they were perfumed by this medical treatment.

Naturally the injections have to be taken for several months, as the perfumed effluvia must be absorbed—must, in fact, embalm the entire body to preserve it, as that of a mummy, against the destructive microbes. The friends, or nurse, of the patient can easily be taught how to perform the operation. This, done systematically and persistently, will, Dr. Roussel maintains, kill the bacillus of Koch, especially if it be a case, not of inherited, but of contracted phthisis. The first cases treated in this manner by Dr. Roussel date as far back as 1883-84, and some of these patients have enjoyed good health ever since. In the month of March, 1888, Dr. Roussel brought before the Society of Practical Medicine eighteen patients suffering from phthisis. In the month of March, 1889, he brought the greater number of the same patients before the society so that they might be examined by the same medical men who had seen them a year previously. Dr. Dujardin-Beaumetz presided at this sitting, and a resolution was carried to the effect that the numerous injections of various substances had left no trace whatever. On the other hand, the patients were either to all appearances cured, or very greatly improved in health. In several instances the analysis of the sputa showed that the bacilli of Koch had disappeared altogether. Apart from these particular cases, Dr. Roussel has had some thirty double analyses of the sputa of his patients made either at hospitals or by eminent bacteriologists. The first of these two analyses for each patient shows that the bacilli of Koch abounded in the sputa. The second, made generally twelve months later, declares that the bacilli had disappeared.

Carbo Animalis in Acute Nasal Catarrh.—Dr. Robert T. Cooper writes to the *Monthly Hom. Review:* Some months ago I was suffering from cold in the head, with its usual accompaniment, blocked nostrils, necessitating the continual use of those insanitary necessities, pocket handkerchiefs, a state of things as commonly met with as it is disagreeable. To relieve the nostrils I used a trituration of lobel. cerul., and then one of carbo vegetab., and without the least effect. In this extremity it was a happy thought that induced me to sniff up a few grains of carbo animalis, which cleared the nasal conduits effectually. This action of carbo anim. is a most important one; it is no little gain to be able to dispense with pocket handkerchiefs in colds of the head, and this in an easy, simple and effectual manner.

Since this I have used the carbo an. in many cases connected with my aural specialty, and am much pleased with its action; it relieves a symptom that gives a great deal of trouble in the treatment of catarrhal deafness. Why carbo animalis should have this effect, and why carbo veg. should not, I am unable to explain; the fact is there, and it is for others to refute or confirm it.

Carduus Marianus for Varicose Ulcers.—In 1882 Dr. Windelband, of Berlin, wrote an article in the *Berliner Zeitschrift*, in which he related the marvelous results that he had obtained from the employment of carduus mari-

anus in varicose ulcers. He says: "The forms that came under our treatment were chiefly fully developed ulcers of bluish or brownish red color, with ichorous discolored granulations, and usually surrounded by brownish-colored dilated veins, with jagged, callous borders, easily bleeding, and caused by a blow, the bursting of a varix, following eczema, rarely consequent on inflammation of the connective tissue, most frequently caused by scratching an eczematous skin. The pains were usually moderate; sometimes the patient complained of burning in and around the ulcer. The most tiresome symptom was the constant itching, which was worst when the ulcer was commencing to heal." He had been favored with large numbers of such cases, both in dispensary and private practice, and had had little or no success with many apparently indicated remedies, such as carbo veg., bellad., rhus, puls., hamamelis, graph., sulp., etc. He was led to the knowledge of the healing powers of carduus in such ulcers in this way: A laboring woman of middle age, who had had six children, and had to do a great deal of housework, came under his care for inflammation of the liver, which left a chronic swelling of that organ. After trying many remedies in vain, he at last resolved to try a decoction of the seeds of carduus marianus. The liver disease rapidly improved under this remedy, and he was surprised to find that some "colossal" varicose ulcers, with which the patient had been tormented for five or six years, were completely healed in a few weeks without any external treatment except the occasional and irregular employment of a simple bandage. This case led him to employ the same medicine in tincture of the seeds in his dispensary practice, and it proved so successful that, of 196 cases of varicose ulcers of the legs of all varieties of degree, 145 were completely cured by carduus alone, though the patients, who were mostly women of the lowest class, continued to go about their work. The only external application was an ordinary flannel bandage, and, when there was much burning or itching, a wet compress or an oiled rag. As these chronic varicose ulcers are usually of a most intractable nature, a veritable opprobrium medicinæ, even with prolonged rest on the part of the patient, it is interesting to all practitioners to know the success that has attended their treatment by carduus marianus. Dr. Windelband gave the tincture of the seeds in the first dilution or mother tincture, five drops three times a day.

Glycerin for Burns.—According to Dr. Grigorescu, of Bucharest, glycerin is a perfect and lasting analgesic in the case of burns. Applied at once to the burned surface, it occasions at the instant of application a slight feeling of burning, followed by complete relief from pain. Where the wound is large it should be kept constantly moist with glycerin. By means of this application, inflammation is almost entirely avoided and sloughing takes place gradually, leaving a much less marked scar than is the case with ordinary dressings.

SIMPLIFIED THERAPEUSIS OF PHTHISIS.*

It will be a glorious day for medicine when the cardinal principle of phthisi-therapy will be recognized to be, as we believe it is, an abundant supply of pure air, to facilitate whose entrance into the lungs every effort should be made, together with a perfectly hygienic environment. Formerly it was thought absolutely essential to send a phthisical patient to the South. A semi-Arctic region like the Adirondacks would have been regarded by our forefathers as absolutely detrimental, if not fatal. To-day many consumptives find relief and cure in the cold, dry air of mountainous New York and in distant Colorado, as well as in the mild atmosphere of the south of France, or of Algiers or Florida. The discussions as to the superiority of sublimate over carbolic acid, the comparative merits of iodoform and boracic or salicylic acid, which were replete with interest and profit at one time, are now of secondary interest, since we know that pure, undefiled manipulatian of the wound is the chief object of asepsis. When contending climates have exhausted their arguments (which are as interesting and profitable to us in connection with phthisi-therapy as were the arguments on the various vaunted antiseptics in surgery), the cardinal principle of treatment will stand in bold relief, and it will be clearly apparent that it is not this or that particular climate—it is not this or that particular altitude—which is most conducive to recovery, but the condition which affords to the patient the best opportunity for an out-door life in air that is free from dust and other deleterious matters; these are the true curative factors.

This idea has been most successfully, because most intelligently, carried into practical execution at Falkenstein, where Dr. Dettweiler looks with disfavor upon medicinal remedies, and pins his faith chiefly to the curative influence of pure air, to which he exposes his patients, without regard to the rigorous climate of winter even, at all seasons. The discipline of this institution is rigid, and almost military in exacting obedience. At 8 A. M. the patients are expected to be down-stairs, under penalty of a fine. Then each one stretches himself upon his reclining chair, of which there are a very large number in the large halls, which he leaves five or six times during the morning to take a ten or fifteen minute walk. "Patients are advised to walk slowly, on a gentle slope, with shoulders erect, and every fifteen minutes to fill the lungs to their full capacity by inhaling through the nose." Breakfast is served, consisting largely of milk, after which the patient returns to his reclining chair, and the rest of the day is passed in the same manner as the morning. Dettweiler is most autocratic among his patients, and teaches them to cough only three times a day. Hence each cough is followed by expectoration, and he never allows them to cough uselessly. Three times a day each patient takes his own mouth temperature, and notes it upon the chart. At 10 P. M. each one returns to his bed-room, which has remained open the entire day; the window is left partly open the whole night, covered by a light blind.

No drugs whatever are used at Falkenstein, and still the results are most satisfactory, thirty-seven per cent., including all grades, recovering completely.

The *Revue D'Hygiène Thérapeutique*, to which we are indebted for these data, says that Prof. Bouchard has recently introduced this treatment into France. He says: "The windows must be left open even during winter nights. Certain precautions, of course, are necessary, but if the treatment is begun in the summer time one is easily accustomed to it. In the beginning it is best to leave the window open and draw the blind, and in very cold weather even the curtain may be pulled down. If patients object strongly to this, the windows in an adjoining room may be opened, and the door left open. By this means a constant supply of fresh air is obtained. If the temperature goes below 50° F., a fire had better be lighted in the room. There is no danger of taking cold as long as one is well covered in bed." The aim is to enable the patient to inspire perfectly fresh (not cold) air, which is constantly made to stream in through open windows, chimneys and door or window cracks.

At Brehmer's Institute the same principle is adhered to, the patient being almost constantly exposed to fresh air, without drafts and while well protected against too sudden changes. Even the dining-rooms are kept at a temperature of 65° F. at all seasons, and the air is renewed five times every hour. The results obtained by this Nestor of simplified therapy are gratifying in the extreme. Of 554 cases of phthisis treated in 1888, 49 (*i. e.*, 8.8 per cent.) were completely cured, 71 (13 per cent.) were nearly cured

* From an editorial in the *Dietetic Gazette*, February, 1891.

—that is, neither bacilli nor elastic fibers were longer present in the sputum—38 were not helped and 34 died. The others were helped somewhat, as shown by a gain in weight averaging eleven pounds. Of the 150 who remained in the institution during the winter 87-88, 17 died, 6 remained unchanged, and the other 127 showed a gain in weight averaging nineteen and a half pounds.

Physicians are too lax, as a rule, in their directions as to exercise and fresh air. Too much is left to the caprice of the patient or the sympathy of the attendant. It does not suffice to tell the patient: "You must exercise to the point of fatigue; use your judgment." The "dose" of exercise, the place, the time, the method, all these must receive as scrupulous and minute attention as we are in the habit of giving to the doses, quality and method of administration of strychnine, arsenic or iron.

Brehmer permits patients to walk in almost all kinds of weather. The promenades are built upon rock, that they are dry even after heavy rains. Patients may use them during the rain even. Along the walks there are open and covered pavilions for rest and protection from bad weather.

Twenty-Second Annual Report of the Board of Directors of the Manhattan Eye and Ear Hospital.*—The twenty-second year of the hospital closes under circumstances of much encouragement.

The work of the hospital has been greater than ever before. The number of patients treated has increased from 12,185 in 1889-90 to 13,156 in 1890-91. In addition to the work done during the day-time, night clinics have been established in some of the departments, both to relieve the pressure upon the usual clinics, and to meet the wants of those who can not leave their work during the day. Thus in every way the effort is to render practical aid to the deserving *poor*, regard being had not only to the convenience of the hospital administration but also to the industrial conditions to which the laboring class must conform.

At the same time every safeguard is applied to prevent abuse of the privileges of the hospital; while honest poverty meets with sympathy and aid, the dishonest thrift that would impose upon charity finds a chilling reception. During the years 1890-91 1,178 cases have been refused treatment, the applicants being found to have means to procure it for themselves.

But each year we feel more and more the stress of our narrow quarters. The work is restricted for want of room to work in. During clinic hours the hospital is a perfect hive, and there is not room to care for the patients properly even by utilizing the basement. And as for ward accommodation its insufficiency is painfully apparent. There are never beds enough. In a single day recently two cases of cataract were sent away not operated upon, simply because there was no room for them in the house. This, however, is something which can be remedied. Expert examination shows that the walls of the building are amply strong enough to sustain the weight of two additional stories. The need for these is as urgent as it was for the original structure, while the cost would be relatively inconsiderable. They would afford sufficient accommodation for years to come, or until we should have means to build upon our newly acquired property, the latter remaining meantime a source of income to the hospital.

Special mention should be made of the contagious wards, this being the only eye hospital in the city which provides for the treatment of contagious eye diseases. During the past year, thirty-eight eyes, with purulent ophthalmia, have been treated, of which the sight of twenty-six has been saved, a result of which we should be justly proud when we consider that the loss from that disease is usually seventy per cent. The wards are conducted at great expense to the hospital and at great risk to the attendants. The patients admitted are from the poorer classes, and can contribute nothing towards their care. They require from three to six weeks' constant care, and one case not infrequently requires the care of two trained nurses.

The hospital is centrally located at 108 Park avenue, and the work is under the direction of eminent surgeons.

* An abstract.

Trephining for Cerebral Hæmorrhage.—Prof. C. S. Briggs, of the medical department of Nashville University, reports a case of successful trephining of the skull for extravasation of blood from rupture of the right lateral sinus. The patient was fifty-one years of age, received a number of heavy blows, and became unconscious; some hours later he was completely comatose, respiration slow and stertorous, pulse forty, left hemiplegia, and right pupil markedly dilated. Upon turning back the scalp the skull was found to be cracked without displacement. The lines of fracture extending two or three inches in several directions. A firm, dark clot was revealed by an inch trephine; the hole was enlarged to two and a half inches diameter and the clot was removed by the fingers, probe and irrigator; in some places it was fully an inch in thickness. Pulsation returned, but was barely perceptible. After patient had reacted somewhat, hæmorrhage recurred in alarming quantity from posteriorly, and of a dark or venous character—probably from right lateral sinus, just above and in front of which the opening was. A half dozen aseptic sponges the size of a walnut, attached to hemostatic forceps, were crowded down upon the sinus, checking the bleeding; the handles were left sticking from the opening and antiseptic dressings applied. The next day patient was much improved; the next day the sponges were removed and wound irrigated with weak bichloride solution; recurring hæmorrhage was controlled by packing with iodoform gauze, which was removed on the twelfth day and recovery was uneventful.

The Telephone for Diagnosis.—In the case of a child two years and a half old, suffering from membranous croup, intubation was successfully practiced recently by Dr. J. Mount Bleyer, but when he came to remove the tube he found that the tube had entirely disappeared. In the hope that it still remained in the upper air-passages he resorted to the use of a telephonic test to locate the position of the tube before resorting to tracheotomy, and the result proved very satisfactory. A delicate metallic probe attached by an electric wire, the other end of which terminated in a telephonic receiver, was passed down through the larynx, and as soon as it came in contact with the tube a distinct click was communicated to the ear through the receiver. The exact location having thus been determined, tracheotomy was performed and the tube extracted by Dr. Frederick S. Dennis, and according to the latest accounts the child was doing well.

Cephalometry.—Dr. Altukhoff, one of the anatomical prosectors in the university of Moscow, has published a paper with a number of elaborate diagrams illustrating the position of the various fissures and convolutions of the brain in men, women and children as taken by Zernoff's cephalometer. This instrument consists of a horizontal brass circle surrounding the head and supporting two vertical graduated semi-circles, one longitudinal, the other transverse. The former is made to revolve so that a screw having a radial direction, which it carries, can be applied to any portion of the skull or of the brain after the skull-cap has been removed. By means of this the latitude and longitude of any spot may be accurately defined, just as those of any geographical locality may be found on a school globe. His paper is published in Russian, but the plates are tolerably intelligible without a knowledge of that language.

MISCELLANY.

—*Tessier* recommends, in acute coryza, the following combination:

℞ Menthol.....gr. vi.
Pulv. boracic acid.....ʒ ii.
Subnit bismuth.....
Pulv. benzoin.....aa ʒ iii.

A good sized pinch may be snuffed up five or six times a day.

—Among the people antique medical theories die hard. This is curiously illustrated by the fact that Bombastes Theophrastus Paracelsus von Hohenheim has been canonized by Austrian popular opinion, and annually pilgrims make an oblation at his grave in St. Sebastian's church, Salzburg, and some go home "cured."

—The headaches of school children, says Dr. W. S. Higgins, in the *Peoria Medical Monthly*, are caused, not by over-study, but strain on the eyes by the white book paper used. Smoked eye-glasses will prevent the trouble, but children naturally dislike to wear glasses, and he now earnestly advises printing school books on yellow paper in blue ink, experiments having proven this the very best combination. For similar reasons white letters on black ground have also been recommended.

—Mr. Francis Galton has recently publicly explained his method of personal identification by means of finger prints. It is a curious fact that the small papillary ridges on the bulbs of the fingers and on the inner surfaces of the hands and feet persist from youth to age, and are the most unchanging and apparently the surest means of pronouncing on any human being's identity.

—DOCTOR: "What you really need—what you ought to have—is a little sun and air. It's the confinement—"

YOUNG WOMAN (interrupting): "Why, doctor, I've only been married two months. Son and heir and confinement, indeed! What do you take me for?"

—Senhora A. Cardia has just taken her degree at the Medico-Chirurgical School of Medicine of Lisbon. Her thesis, which was on hysteria, was dedicated to Queen Amelia. Senhora Cardia is the first lady who has been admitted to the medical profession in Portugal.

—Mix acids with water by pouring the acid into the water, and not the water into the acid, as the latter process may cause an explosion of steam.

—M. Lessenue states that if a pin be thrust into the body of one supposed to be deceased, the appearance of the pin-hole left on withdrawing the pin will determine the accuracy of the supposition. If the person is dead the hole remains open, as when the pin is stuck into leather. If the person is alive the skin contracts and the pinhole entirely disappears.

—*Why?* The Chicago *Tribune* notes the fact that physicians headed the list of suicides for the past ten years, and the proportion this year is still greater.

—One of our physicians recently received the following letter from a country physician (?): "Dear dock I hav a pashunt whos phisicol sines shoes that the windpipe was ulcerated of, and his lung have dropped intoo his stumick. he is unabel to swoller and I feer his stumick tube is gon. I hav giv hym evry thing without effeckt. his father is welthy Onerable and influenshial. he is an active membber off the M. E. Chirsch and god nos I dont want to loose hym. what shall I due. ans. buy returne male. yours in neede." —*Med. News.*

—A bullet wound in the groin of a man shot in Reno, Nevada, set up adhesive inflammation, which radically cured a hernia.

—A French scientist says, the domestic pets carry at least thirty per cent. of the common contagious diseases from house to house.

—The salts of strontium, particularly the lactate, are said by Drs. Dujardin-Beaumetz and Paul to diminish albuminuria about one-half.

—The late Mrs. Robert L. Stuart bequeathed to the Hahnemann Hospital $10,000 and to the Western Dispensary and the dispensary of the New York Homœopathic Medical College $5,000 each.

—Hyoscyamine has been found in several varieties of lettuce.

—The enormous quantities of arsenic in many samples of wall paper suggest a prolific source of arsenical poisoning. D. H. Galloway found only twenty-four per centum of the samples he examined free from this metal. Thirty per centum contained more than ten milligrammes to each square metre. The many cases of recovery from obscure forms of debility by change of locality without change in food, air or water, suggests the possibility that cases of arsenical wall-paper poisoning are overlooked.

—Dr. Joseph Körösi, of Budapest, has offered the sum of $300 as a prize for the best essay on the objects of demography and its progress in the chief countries of Europe and America. The competition remains open until January 1, 1894. The award will be made at the opening meeting of the next International Congress of Hygiene and Demography, at Budapest, in 1894. The essays may be in either the English, French, German or Italian languages.

—An enterprising physician in California advertises: "I will pay half of the funeral expenses in cases where I am not successful."

—A monster magnet has been constructed at Willett's Point, New York, by winding eight miles of submarine cable around two cannons. These guns are eighteen feet long, and stand twenty feet above the ground. A force of 25,000 pounds is required to pull off the armature.

—An invention of considerable importance in astronomy has been made at the Georgetown College Observatory. By means of an instrument called the photochronograph, a star is caused to record with absolute accuracy the time of its own transit across the meridian, thus eliminating all personal errors.

—By using only his own apparatus M. Marey has succeeded in photographing the flight of insects, the exposure of the plate being necessarily not over 1-25,000 part of a second.

—Dr. Grewcock, in *London Medical Recorder*, says he found out quite accidentally a novel method of applying glycerine, which is equally efficacious with the clyster. If a piece of cotton wool alone, the size of a nut, is well saturated with glycerine and inserted as a suppository, in a short time a copious motion is produced.

—There are nine medical schools in Mexico, the course of study in each being six years.

—An English court has lately imposed a fine of $750 upon a landlord for heedlessly stowing guests away in damp beds, thereby causing illness.

—Brazil has a law for the medical examination of persons about to marry to determine their fitness. It is a sanitary measure that is found to be necessary to stop the transmission of scrofula, which at one time threatened to destroy the strength of the people.

—Dr. Pfuffer, of Germany, claims to have discovered the bacillus of influenza both in the sputum and blood.

—Dr. Ortega reports the case of a large still-born infant weighing twenty-three and one-half pounds.

—Dr. Somer claims to have relieved vaginismus with the galvanic current.